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FEEDING THE PEOPLE IN WAR-TIME

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and
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1940

TO
OUR CO-WORKERS IN NUTRITIONAL AND
AGRICULTURAL RESEARCH WITHOUT
WHOSE ASSISTANCE THIS BOOK COULD
NOT HAVE BEEN WRITTEN

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FOREWORD

For a number of years we have been engaged on investigations on food in relation to health, agriculture and trade. When the War broke we had just completed a comprehensive survey of food consumption among different classes in the United Kingdom. The information gained in our studies leads us to believe that the food measures taken so far are not sufficient to meet war conditions. They are based too much on detailed control of distribution and too little on the food requirements of the people.

When the Fighting Forces are at full strength and the unemployed absorbed into industry, national food requirements will be increased. As national expenditure increases, prices will rise. The value of any food measures can be assessed by the extent to which they (*a*) increase the total supplies of food and (*b*) bring a sufficient amount of the right kind of food within the purchasing power of the poor. With these objectives in view, we have suggested a policy based on the nutritional needs of the people and on increased home-production to meet these needs.

In Great Britain we have for many years produced only about one-third of what we consume. No possible effort could, in a short time at least, make us self-supporting. We must continue to import; but to economise in shipping and foreign credits, home-production must be increased to the utmost and the increase must be planned to provide those bulky 'protective' foods which give the highest yield per acre so that our imports may, as far as possible, be restricted to the cheap energy-yielding foods which occupy small shipping space in proportion to their food value.

Our food position is not so strong as it should be. We need a food campaign in which farmers, allotment holders and housewives will co-operate in a great national effort to assist the Government to make the food front impregnable. For this we must have a clear policy of production and consumption which people can easily understand. We have tried to show the overwhelming importance of food in the present war and, to enable the situation to be understood, we have given a brief account of the present position and of the measures which we believe necessary to make the food position safe.

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THE ARGUMENT IN BRIEF

FOOD was one of the decisive factors in the War of 1914-1918. It may be even more important in this War. *Victory will depend as much on the morale and powers of endurance of the civilian population as on the efficiency of the fighting forces.*

Morale and powers of endurance cannot be maintained unless the whole population is on a diet good enough to maintain it in health. Our War food policy should, therefore, be based on health requirements.

Although there has been in recent years a remarkable improvement in the national diet which has been accompanied by an equally remarkable improvement in the national health, the diet of nearly a third of the population is still not up to the standard which we now know to be necessary for health.

The consumption of the cheap foods, such as bread and sugar is fairly uniform among all classes ; but consumption of the 'protective' foods such as milk, other dairy products, vegetables, fruit and eggs, corresponds with family income.

These foods are automatically rationed by price. Even a small fall in price is accompanied by a corresponding increase in consumption and a small rise by a decrease. Public health measures for supplying milk and other foods free, or at reduced prices, to mothers and children of necessitous families is based on the well-ascertained fact that their purchasing power is too low to enable them to obtain sufficient. This part of the population who, through poverty, are unable to buy sufficient of the right kind of food, is the weakest part of the home front. Our war food policy should be designed to meet their food requirements. If they are well fed we need not worry about the rest of the population.

During the War there will be a shortage of some foods. Rationing prevents queues and goes some way towards preventing a still more unequal distribution of food than existed in pre-War days. But unless the rationed amount is within the purchasing power of every family, rationing will not secure equal distribution. In more normal times, the poorest third of the population do not buy 4 oz. of butter or 4 oz. of bacon a week. If the rationed amount has been calculated on the assumption that every family would buy that amount, there will be a good deal remaining unsold unless coupons are traded or shopkeepers sell additional amounts to those who have the money to purchase.

There will also be a rise in prices. In the War of 1914-1918 prices of subsidised foods rose by 133 per cent. and of unsubsidised by 284 per cent. The rise is due mainly to monetary causes; cost of production will increase as war expenditure increases, it cannot be controlled by arbitrary price fixing. The only way to prevent a rise in price to the consumer is to subsidise food, as the Government has wisely decided to do.

In peace-time we spend more than £1,000 million per annum on food. The nation cannot afford to subsidise all foods. We must select those which are absolutely essential for health. The list which must be subsidised can be made quite small. *With sufficient milk, vegetables and potatoes, there need be no malnutrition. With sufficient bread, fat (butter or margarine), potatoes and oatmeal, there will be no starvation.*

It is suggested that we should concentrate first on a few essential basic foods chosen so that a diet adequate for health can be made up from them. We should produce or import these in such abundance that there will be no need for rationing. We should fix the price in relation to the purchasing power of the poorest family and pin it at that level no matter how the value of money and the resulting cost of production may fluctuate.

The list should be chosen after consultation with the Ministry of Health, the Medical Research Council or the Government's Advisory Committee on Nutrition. It should consist, to the largest possible extent, of foods we can produce at home and for the rest, of those which cost least and occupy smallest shipping space in proportion to food value.

It would be better to subsidise, to the full extent necessary to make a sufficient amount available for everybody, those foods which are of the highest value for health and can be produced in abundance at home, than to subsidise bacon and meat which are of lower value for health and need to be partly imported and paid for with foreign credits.

The two most expensive foods are milk and vegetables. At the outbreak of war 40 per cent of milk produced was surplus to the liquid market and was sold for manufacturing purposes at from about 5d. to 10d. per gallon. There is some loss in manufacturing milk even into butter and cheese. *The full value of the milk is got by consuming it as liquid milk.* Hence the surplus should be made available on the cash-and-carry basis for those willing to take the trouble to get it at, say, 1s. per gallon. This would enable the poorest third of the population to bring their consumption up from the present level of about $\frac{1}{4}$ pint per day to about $\frac{3}{8}$ pint, the level among the wealthiest two thirds. Any money spent on subsidising milk should be devoted to bringing it within the purchasing power of the poor. The wealthiest two-thirds of the population, who insist on getting milk delivered at the door, can afford to pay the economic price. As the milk needed to bring consumption of the poor up to $\frac{3}{8}$ of a pint per head per day is already being produced there would be no great cost to the nation in making it available on the cash-and-carry basis at, say, 1s. per gallon.

If the campaign for increased vegetable growing in

gardens and allotments were pushed hard enough it might be possible to have nearly half of the families of the country partly self-supporting in vegetables. Canning factories should be running to full capacity in summer and autumn building up a store for winter use. Canned vegetables would need to be subsidised. But if better methods of distribution were introduced to reduce the cost of distribution of vegetables, which is greater than the cost of production, it might be unnecessary to subsidise vegetables apart from meeting the whole or part of the cost of wholesale distribution.

The consumption of potatoes in Great Britain is only half what it is in certain other countries, for example, Belgium and Germany. *The potato is of special value for health.* An acre of potatoes gives twice as much food as an acre of wheat. It is the surest first crop off ploughed-up old pasture. *The potato is the best insurance crop against food shortage.* Potatoes should be subsidised for increased consumption.

There would be no difficulty in inducing the poorest third of the population to consume as much milk and vegetables as the well-to-do if the price were within their reach. They would also consume more potatoes. In the Bishop Auckland experiment a reduction in price of potatoes on the cash-and-carry basis of 43 per cent was followed by an increase in consumption of 69 per cent.

If we brought into cultivation 4 million acres to replace those gone out of cultivation since 1918, and adjusted our dietary habits to consume more of the food we can produce and less of what we must import, we could reduce our food imports from the pre-War level of about 20 million tons, to about 5 or 6 millions which is sufficient to provide the wheat, sugar and fats which we cannot produce at home.

Even though imports were reduced to wheat, sugar and fat there would be no need to restrict the national

diet to the small list of absolutely essential foods. Without importing any feeding-stuffs we could still produce at home the greater part of our beef and mutton and a considerable part of the eggs and bacon we produced in peace-time. We would also have some fish, fruit, and, in smaller amounts, some other foods. If, in addition to the essential foods named, these others were equally distributed, everyone could have a diet adequate for health and sufficiently varied to meet likes and dislikes so far as these are reasonable in War-time. Hence, if we have the right food policy, which involves maximum production of the right kind of food, and if we are willing to adjust our diet to the foods available, we can fight the War indefinitely without any fear of starvation, or even of food shortage.

But the shipping position is not likely to be so bad nor our foreign credits so low, that we cannot import cheese, dried fruits and other foods from the Dominions and other countries, in addition to wheat, sugar and fat. The national food supply during War-time need not cause us undue anxiety. *The greatest difficulty is not to maintain the supply but to ensure that the poorest third of the population gets its proper share.*

It is suggested that the wholesale price of the essential foods, which should be produced in abundance to prevent the necessity for rationing, should be fixed at a level which would enable the poorest family to obtain sufficient for their needs, for, say, two thirds of the money available for food leaving the remaining third to be spent on the other non-subsidised foods according to the physiological needs and likes and dislikes of the family. Thus, for example, if it were found that 4s. 6d. per head per week represented the lowest expenditure level available for food, people would be able to obtain sufficient milk, vegetables, potatoes, bread, fats, oatmeal and probably sugar for 3s. the remaining 1s. 6d. being available for meat, fish, dairy

products, fruit and other foods, the prices of which could be allowed to reach their economic level.

The policy suggested here calls for a great increase in home production. The agricultural policy, so far as it is known, is too vague to call forth the additional foods we need.

Production is regulated by price in the same way as consumption. The farmer produces whatever he thinks will bring him a profit. If he cannot see a profit, the filling up of forms or exhortations to grow more will not force him to produce. If he can see a profit, he will produce more in any case. He should be given a guaranteed market and a guaranteed minimum price calculated to call forth the additional food we need. The guaranteed prices of the different products should be adjusted to each other in such a proportion that the additional food would be produced in the proportions we need.

The control of production by regulation of the prices offered to farmers would enable them to devote their land to crops which would give the best return. This would utilise our land to better advantage than a system of compulsory ploughing up according to a fixed ratio without any guidance as to what additional foods should be grown.

The guarantee of a minimum price should cover the War and a three-years post-War period. This would make production more efficient and cheaper because the farmer would plan for a period of years instead of continually changing his programme, chasing fluctuating prices.

We should also have a long-term agreement with the Dominions so that they can adjust production to our requirements.

If the War food policy is based on the requirements for health there need be no serious dislocation in agriculture after the War. The increased production of the protective foods needed to bring consumption of the poorest third

of the population up to the level of health will be needed after the War.

Controlling consumption by regulating prices would leave consumers the greatest amount of freedom possible in a time of food scarcity to adjust their diets to their needs. This would give a better utilisation of the foods available than rationing from Whitehall by fixed amounts per head.

If the wholesale prices were fixed low enough it is doubtful whether it would be necessary to fix retail prices. The cost of retail distribution varies in different shops and even in the same shop with different customers. There is a danger of it being fixed at the highest level and the poor not getting advantage of the less-expensive service they receive. If the wholesale prices are known the housewives would probably be more efficient in preventing profiteering than any Committee appointed for that purpose. The success of controlling consumption by price, however, would depend upon there being an abundance of subsidised essential foods. Rationing might be necessary for some of the other foods. In any case, the scheme should be kept ready to be applied in the event of an unforeseen serious shortage.

The food requirements of the civilian population in War are not essentially different from the requirements in peace. If the War food policy be based on health needs, the increased production of protective foods advocated here, subsidies to bring them within the reach of the poor, and the better organisation of wholesale distribution could, with great advantage, be retained permanently. A great deal of the improved organisation of the food industry brought about by government measures in the last ten years was based on the work of the Food Ministry under Lord Rhondda in the War of 1914-18. Many of these war measures could have been retained and modified to meet peace conditions with great advantage to the nation.

CHAPTER I

THE HOME FRONT

THE wars of the past were fought by armies and were lost or won on the battle-field. *This War is very different ; it will be lost or won in the homes of the people.* We dimly realise this. Our hopes for a short War are based upon the expected internal collapse of Germany and, indeed, we are trying to bring about that collapse. The Nazis realise it much more clearly than we do. The undermining of the resistance of the people behind the Fighting Forces is an essential part of their technique of conquest. They have used it successfully in the countries they have already over-run. They are now using it against us. By sinking our ships and threatening us with air-raids they are trying to make home conditions intolerable. By continuous open and insidious propaganda, they seek to destroy national unity and make people doubt whether their social and economic system is worth fighting for. They know that the day the man in the street finds difficulty in understanding what we are fighting for, our Home Front is undermined and they have then a chance either of defeating us in the field or of imposing a false temporary peace which would be as bad as defeat. There are thus two separate battle fronts : the Fighting Front and the Home Front. The longer the War continues, the more important the Home Front will be.

So far our attention has been focused on the Fighting Front. We were anxious to know how our men, who a few weeks ago were at benches and desks, would stand up to the Germans who have been trained for war for the last three or four years. The preliminary skirmishes in the air and on the sea have demonstrated that, man for

man, we are better than the Germans. This is as might have been expected. Modern mechanised warfare calls for intelligence and initiative on the part of the individual. The disciplined masses of men, whose intelligence has been dulled by continuous drenching propaganda insisting on implicit unthinking obedience, cannot compete with men who have been accustomed to think and act for themselves. The fighting efficiency of free men of a democracy which has something worth fighting for is well illustrated in the amazing resistance which the handful of Finns put up against the masses of the Russians who have overwhelming numbers of aeroplanes, tanks and guns.

Nor need we fear for the quality of our armaments. War calls forth new inventions. Applied science made great advances in the War of 1914-18. But the requisite of scientific thinking is originality and independence of thought and these cannot be tolerated in the Nazi regime. All the Jewish and the German men of science, who still retain the power of thinking for themselves and are unwilling to sacrifice truth for personal safety, are either out of the country or in concentration camps. Germany will suffer, as the U.S.S.R. has done, from the liquidation of her leading men of science and independent thinkers. *Modern warfare employs all the resources of science. The Nazis have depleted their resources and left the balance in our favour.*

We can have confidence in our Allied Fighting Forces. They have already shown that they can hold the enemy. The danger of an overwhelming defeat in a *Blitzkrieg* is passed. There may be many battles on land and sea and in the air. But the resources of men and material on both sides are so great that no single battle will be decisive unless the defeat is inflicted on a country whose people are already war-weary and beginning to wonder whether the cause they are fighting for is worth the sacrifice they are making. If it is a long War, the issue will depend

more upon the will to victory and the power of endurance of the people than on the achievements of the Fighting Forces. Indeed, it is possible that the psychological effects of victories or defeats upon the people at home will be more important than the material effects.

The strength of the Home Front depends upon the spiritual and physical stamina of our people. The spiritual is even more important than the physical. History is full of examples of wars being won against great odds by men who had an ideal worth suffering and even dying for. It is of the utmost importance that our people should realise the tremendous significance of the cause for which we fight. If the War is prolonged, it may well be that we shall be led to victory, not by sober politicians reared in the traditions of the past but by young men who have a fervid faith in their vision of the future and who have the power of instilling that faith into their fellow countrymen and inspiring them with an enthusiasm which will make them willing to sacrifice everything, even life itself, to win the new world.

But important though spiritual stamina is, we cannot give full expression to it unless we are both physically and mentally fit. Courage and power of endurance depend to a large extent upon health. *The health line of the Home Front may become as important as the Maginot Line.* Health depends upon food, and food is probably the most vulnerable part of the whole front. Elaborate preparations have been made on both sides to maintain the food supply. It is not merely a question of preventing starvation. A nation may collapse long before it is starving. What is to be feared in war-time is not so much an actual shortage of food as a deterioration of the diet to a level at which the health and physical fitness of the population cannot be maintained. The experiences of the War of 1914-18 and also all we have learned since then about the effect of food on health show that the resistance of the Home

Front depends very largely upon the nature of the national diet.

In the next chapter, we will consider the decisive part which food plays in affecting both the efficiency of the Fighting Forces and the courage and resolution of the non-combatants.

CHAPTER 2

THE IMPORTANCE OF FOOD IN WAR-TIME

ALL great generals have recognised the importance of the proper feeding of their armies. Badly fed troops have neither the courage nor the physical endurance needed to fight a campaign. Napoleon impressed on his generals the importance of food by the saying "An army marches on its stomach". *Had Napoleon been alive today, the discoveries on nutrition in the last twenty years would have been applied to increase the efficiency of his troops.* He would have known all about the effect of deficiency of vitamin A on vision in dim lights; the effect of deficiency of vitamin B₁ in producing nervous debility and listlessness, and the influence of the quality of the diet on susceptibility to infectious diseases.

In many of the past wars, the number of men who died from deficiency disease exceeded the number killed in battle. Dr. Barnes, writing in 1863 about conditions in the Crimean War, says, "The fearful waste of life from sickness in the allied armies during the early part of the Russian War is a calamity still fresh in the memory. The fundamental disease, modifying and aggravating all the other diseases which prostrated our soldiers, was scurvy, and the cause was the want of vegetable food." He contrasts the health of the Army with that of the Navy. There was more scurvy than usual among the men in the fleet in the Black Sea but "the navy retained its efficiency unimpaired" because they were supplied with some fresh vegetables and lime juice. The records show that more than ten per thousand of the sailors were suffering from scurvy. From what we now know of vitamin C deficiency, if that

proportion were suffering from fully developed scurvy, there must have been a very large number affected to a lesser extent. If that was at the time considered an efficient state of health, the condition in the Army must have been appalling. There is evidence that it was so. According to reports, there were some regiments in which there was scarcely a man free from scurvy. When later in the war the commissariat issued lime juice and vegetables, the scurvy disappeared and what was then considered a "fair standard of health" was restored.

The 'newer knowledge of nutrition' was not available to military authorities in the War of 1914-18, and there were several striking instances of the effect of food on the fighting efficiency of the troops. Our own army in the East suffered from lack of vitamins in their rations. The troops who capitulated at Kut were suffering from beriberi due to deficiency of vitamin B₁. An outstanding characteristic of this form of malnutrition is nervous debility and lethargy. There is a saying in the East which expresses the progressive psychological deterioration of those suffering from this dietary deficiency. "It is better to walk than to run; it is better to stand than to walk; it is better to lie than to stand; it is better to sleep than to wake; it is better to die than to live." People suffering from even a minor degree of deficiency in vitamin B₁ in their diet have no stomach for a fight.

It is now recognised that the collapse of the Italian army at Caporetto in October, 1917 was at least partly due to the poor rationing of the soldiers. Their ration, in addition to being poor in quality, provided only 3,100 calories—20 per cent less than the average of the British, French and German rations. This is a level of nutrition at which soldiers cannot maintain the physical fitness and the morale needed to fight a battle. The Italians profited by the

experience at Caporetto. In their Abyssinian campaign, all the new knowledge acquired in the last 20 years was applied to make the army rations fully adequate for health. The result justified the trouble taken. It is reported that health and freedom from disease of the Italian troops reached a level which has never been attained in any army in any previous war.

In the present War men must be alert and mentally fit as well as physically fit. It is no longer sufficient that troops should be able to march and fire a rifle or thrust with a bayonet. All branches of the Fighting Services are handling highly complicated weapons which can only be used efficiently by men who are mentally alert with perfect co-ordination of brain and muscle. The quality of the men is almost as important as the quality of the weapons. Recent research on nutrition has shown that the nervous system is affected by the quality of the diet. In relatively minor degrees of deficiency of some of the vitamins, the efficiency of the system is impaired. Power of adaptation to dim light may be lessened. There may be a decrease in the powers of concentration and an earlier onset of mental fatigue. Hence, speed of reaction and staying power, which depend on nervous stability, are definitely affected by the nature of the diet. It is not sufficient that troops should have plenty of food to meet the heavy energy expenditure of fighting; if men are to be kept at the highest possible state of efficiency, the ration must contain a sufficient amount of all the vitamins and minerals, the importance of which for physical and mental efficiency has been emphasised by all we have learned about food in the last twenty-five years.

After the War, when information on the rations supplied to the Fighting Forces of different countries becomes available, it will be interesting to see what correlation there is between the fighting qualities of the men and the nature of their food. From the results of dietary

surveys made in the last two or three years, it would appear that the Scandinavians are the best fed people in Europe. Their consumption of milk, the most important 'protective' food, is high. In Finland, the average consumption is more than 1 litre ($1\frac{3}{4}$ pints) per head per day, an amount which is sufficient even for children. A remarkable feature of Scandinavian diets is that there is little difference in quality between the diet of the working classes and that of the middle classes. Provided the rations of the Fighting Forces correspond with their peace-time diet, one would expect that Scandinavian troops would show a high degree of alertness and individual initiative combined with great powers of endurance.

In the present War we may assume that on both sides those responsible for the feeding of the Fighting Forces are well advised by physiologists and, as they have a prior claim to food, there is little likelihood of the men suffering from the results of dietary deficiencies if the knowledge we now have be applied by those in authority.

The proper feeding of the much larger number of civilians is a more difficult problem than the feeding of the Army and Navy. Modern warfare affects the whole nation to a greater extent than wars of the past, and victory depends almost as much on the resolution and powers of endurance of the non-combatants as on the results of battles. This is well exemplified in the fate of the German nation in the War of 1914-18. Their power of endurance was undermined by food shortage. The harvest of 1916 fell below the estimated amount. Sir Thomas Middleton, whose history of the food position in that War is a mine of information, records that the discovery that there was a food shortage "created a crisis and a panic. . . . The effect produced in a few weeks was extraordinary and almost before their watchful rulers realised what was

happening, the morale of the civilians of the towns had disappeared. The 'will to win' of which we heard so much in 1915 had been evaporating throughout 1916, and in April 1917 it gave place to a demand for 'peace at any price'." The complete collapse of the nation in the early summer of 1917 was averted by drawing upon the military reserve stores of food.

The position gradually became worse. By 1918 the civilian ration, even that supplied to munition workers, provided less than two thirds of the pre-War consumption, reckoned in terms of calories. Accompanying the decrease in the amount, there was a deterioration in quality. There was a shortage of fat-soluble vitamins. The daily consumption of fats (butter, margarine and lard) fell from the pre-War level of 58 gm. per head per day, to 16 gm. in 1917-18. On such a poor diet, men were unable to do a full day's work, and the output of the factories fell. The late Professor Starling, who reported on conditions in Germany at the end of that War, said that the people were physically and mentally enfeebled. They were in a condition of dull depression and lassitude; they had no feeling of national honour; they had completely lost the will to victory. Even at this stage, a great victory in the field might have revived the national courage and enabled them to carry on; but a series of defeats in the field, inflicted on a people enfeebled by poor diet, brought about complete collapse.

The food position in Great Britain was never anything like so bad as it was in Germany although it caused great anxiety in the years 1917-18. The rapid advance of the German armies in the autumn of 1914 and the trying weeks in the spring of 1918 showed that the spirit of our people could not be broken by military reverses. The greatest risk was war-weariness following a food shortage. The Germans, knowing from their own experience how vulnerable the stomach is in a nation at war, intensified the U-boat

campaign in the hope of reducing us to the same straits as themselves. We were saved first and foremost by the British Navy, whose work in safeguarding food transport was facilitated by the introduction of the convoy system; secondly, by the organised purchase of food from abroad and the organisation of distribution under Lord Rhondda; and thirdly, by increased home production. In 1918, we produced about 1 million tons of wheat, and $2\frac{1}{2}$ million tons of potatoes more than the average in pre-War years. It is estimated that the food supply per head of the population (in calories) was actually slightly higher in 1918 than in 1914.

What is the position in the present War? There have been many references in the Press to food shortage in Germany and some people seem to think that the position is so bad that there is likely to be an early internal collapse such as occurred in 1918. *Reports of food shortage in Germany should be received with caution.* A few years ago, when the Nazi leaders called on the German people to sacrifice butter for guns, there were rumours, which appeared to be well founded, of acute food shortage in Germany. In the summer of 1937 we visited Germany to get first-hand information on the food position. We found that some foods, such as meat, sugar and white bread, were scarce and expensive, and there was not an unlimited supply of butter. Although meat, sugar and white bread were expensive, milk, vegetables and potatoes and some other foods were astonishingly cheap; so cheap, indeed, that we thought we must be making a mistake in reading the price marks and actually bought some to make sure that there was no mistake. If people have sufficient of these, they can have a diet fully adequate for health, even though there is a shortage of meat, white bread, sugar, butter and certain other foods. Indeed, the health statistics and the appearance of the people in the poor districts gave *no evidence that malnutrition was more prevalent in Germany than*

in other large countries, such as Great Britain or the United States.

The belief in the food shortage in Germany depended largely upon statements made by tourists and other observers of the middle and upper classes. These have been accustomed to an abundance of all foods and they naturally thought that because there was evidence of a shortage of some foods, such as butter, in the middle and upper classes, the food shortage among the working-classes must be acute. As a matter of fact, although Germany had less butter than we had, it was much better distributed under their food system and it is doubtful whether the working-classes in Germany had less butter than the working-classes in Great Britain.

At the present time, Germany may be short of food, but it would be unwise for us to place too much confidence on rumours of a food shortage received through neutral countries. The war leaders in Germany have been preparing for war for three or four years. They have all the experience of the War of 1914-18, and it is difficult to believe that they would embark upon another major war without taking means to ensure that the food shortage of 1917-18 would not occur again. Whatever the food position may be, we would be safer to assume that Germany has applied all available scientific knowledge to the food problem and has made provision to ensure that there will be no lack of essential foods, however long the War may last. Indeed, such evidence as we can find seems to indicate that there is, so far, no shortage of bread, potatoes, milk and vegetables. Provided there is sufficient fat, the health and efficiency of the people can be maintained on these, even though there is a shortage of other foods.

Germany is nearly self-supporting in food. Her supply in the War of 1914-18 would have been adequate but for the partial failure of the harvest which, in turn, was due

to the lack of fertilisers, especially nitrates. In spite of the short crop, she was able to maintain the ration of the people at more than half its pre-War level. It is unlikely that she will lack fertilisers in the present war. Nitrogen can now be extracted from the air on a commercial scale, and Germany has such an abundance that she is actually exporting her surplus. We should not, therefore, expect the German food shortage of 1917-18 to be repeated. *People here who spread ill-founded rumours of hunger in Germany are doing a serious disservice to their country.* We enjoy being told the things we would like to be true, but in war-time it is much safer to over-estimate the strength of the enemy. We should act on the assumption that Germany has made full preparations for the feeding of her people. It will be better to be surprised at a weakness on the enemy front than to be disillusioned and confounded by an unexpected strength.

Our own food position demands all our attention. We obtain the greater part of our supplies from overseas. The War puts a heavy strain on the Navy and Mercantile Fleet and we must be prepared for an interruption of the steady flow of imports which went on in peace-time. In 1917, our food position caused us great anxiety; indeed, it looked for a time as if the supply of food was more important for victory than the supply of shells. It is just possible that the decisive factor in the present War may be the food supply. So far, we are enjoying practically the same diet as we had in peace-time. Although we must import a bigger proportion of our food than the Germans, our command of the seas enables us to draw it from countries where there is abundance, whereas Germany's source of imports is limited to the uncertain supplies which she can get from the U.S.S.R. and the eastern countries of Europe. Further, while Germany is already producing nearly up to the limits of her capacity, we can greatly increase our home production by bringing into cultivation four million

acres to replace those which have gone out of cultivation since 1918. Provided we have a united national effort and a sound war food policy, there does not appear to be any reason why we should not maintain the relatively advantageous position we now hold.

CHAPTER 3

TRANSITION FROM PEACE TO WAR

THE outbreak of war caught us when we were changing over from nineteenth century ideas of the importance of food for trade to twentieth century ideas of the importance of food for human welfare. The change in ideas was due to the discoveries in nutrition in the last 25 years. Before these discoveries were made, it was assumed that if people had plenty of food to satisfy hunger and plenty protein, the main constituent of meat, all the requirements of the body for food would be met. Diets were calculated in terms of calories and protein without any reference to the then unknown vitamins or to the importance of minerals.

The difficulty of evolving a food policy for war, which should be based on our requirements for health, is increased by the fact that we have never had a food policy on this basis in peace. For more than half a century, we have had a definite educational policy which provides a certain level of education for every child, a level which has steadily risen as our national wealth has increased. In recent years, we have had a housing policy which, when it comes to full fruition, will provide every family with a house with living space and sanitary accommodation sufficient to maintain health. *But we have not yet a food policy designed to provide a diet adequate for health for every family.*

Although an increasing number of people who appreciate the significance of the 'newer knowledge of nutrition' have, in the last two or three years, been emphasising the importance of food for health, politicians and economists have always regarded food as a commodity similar to any other class of merchandise. As we spend somewhere

between one fourth and one third of our national income on food, its importance in trade is greater than that of any other single class of commodity, and the national food supply has been affected from time to time by the divergent pull of different agricultural, commercial and financial interests.

In the nineteenth century the industrialists wanted cheap food because the price of food affected wages and, therefore, the cost of production. As the industrialists had more political power than the agriculturists, the national food supply came to consist, to an increasing extent, of cheap imported food with the result that home-production became unprofitable and British agriculture declined.

Following the world economic crisis of 1930, the price of imported food fell to a level below the cost of production either at home or abroad. It seemed desirable in the interest of our exporting industry and our overseas investments that the world price of foodstuffs should rise. An increase in the amount paid to the overseas food producer made dividends more secure and increased the amount available to purchase our exports. A rise in prices was also in the interest of our farmers who, through the National Farmers Union, had acquired a good deal of political power. Measures were, therefore, introduced to raise prices.

It is now evident that, apart from wheat,¹ the main cause of the fall in prices after 1929 was decreased con-

¹ Before the War of 1914-18, the world consumption of wheat was increasing at the expense of other cereals, but the increase in demand was partly offset by the tendency of energy requirements to fall with the growing mechanisation of industry. During the War there was a considerable increase in world production. When, therefore, the policy of self-sufficiency in food production was adopted in Europe and even the United Kingdom offered a subsidy on wheat, equivalent to twice the world price, there was a world surplus relative to the old markets. So far as Europe is concerned this was probably a true surplus. The International Wheat Commission appointed to deal with the matter, tried with only partial success, to get the great wheat producers to reduce their wheat acreage. Yet relatively to world food requirements, there was no true surplus. It could easily be absorbed by the poorly fed peoples of the Far East.

sumption owing to the fall in purchasing power which followed the rise in unemployment. Taking 100 as the index of world production in 1925-9, the production of crude foodstuffs rose only from 103 in 1929 to 105 in 1932, whereas industrial activity fell from 112 to 78. The accumulation of food, surplus to economic demand, was due to under-consumption rather than over-production. At the time, however, it looked as if the 'glut' were due to over-production and, consequently, the measures adopted to raise prices were the reduction of imports and the control of home-production.

In these schemes for 'regulating supply to demand', demand was interpreted in the commercial sense as the amount coming on the market which could be sold at a profit and not as the amount needed to meet the requirements of all the people in the country. In price fixing, as in the case of milk, the price was fixed not at a level which would enable every family to purchase sufficient for its needs but at a level calculated to yield a profit to producers and distributors. All the political parties seemed to act on the assumption that, if production and trade were profitable, all would be well.

As the examination of the food position was continued by successive commissions and committees, it became evident that restriction of production was not in the interest of either agriculture or trade and that there were serious objections to artificial methods of raising prices. Consequently, in more recent times, the tendency has been to assist agriculture by direct grants in the form of subsidies of one kind or another from the Treasury. This form of direct assistance has been of much more value to the industry than measures which maintain prices by artificial scarcity.

It is easy to criticise any of the measures affecting our national food supply during the last ten years but it must be remembered that we were in a transition period when

there was a conflict of ideas. Whatever is done with food affects not only agriculture but almost every trade and financial interest and every household in the country. We were proceeding by trial and error. Many of us hoped and believed that, according to our democratic methods which allow full discussion and a free expression of opinion, we were, in a spirit of good-will, evolving a food policy which would have reconciled the interests of health, agriculture and trade and brought about the greatest social reform of the century.

The War has completely changed the agricultural and economic food problem. There is no longer any question of restricting production or restricting imports; we shall need all the food we can get. The price problem has also changed; we are faced not with the economic difficulty of low prices but with the danger of rapidly rising prices with resulting inflation and national poverty.

To meet the new situation we may set ourselves to keep the national diet as near as possible to what it was in peace-time by growing and importing foods in the same proportion as we did before the War and by rationing one food after another as a shortage occurs. We may try to control the rise in cost by fixing maximum and minimum prices. But if we merely adopt defensive measures, designed to try to keep the food position as near as possible to what it was in peace-time, there may be a gradual deterioration in the national diet with accompanying deterioration in health and physical efficiency. Food scarcity and high prices will bring hardships to all, but the poor will suffer most and the number that will be poor will increase.

The war policy should be based on the physiological needs of the population. The health aspect is even more important in war than in peace. *We are a beleaguered nation, and in our plans for food the over-riding objective, indeed the only objective worth considering, is to provide a national diet which will maintain everybody in health. Trade considerations and many*

of our food likes and dislikes will have to go by the board. It would be a national crime if we spent money and effort providing one part of the population with non-essential foods before we had made sure that every family in the country had a sufficient supply of the common foods to provide a diet adequate for health.

In the next chapter, we shall consider pre-War food consumption in relation to health.

CHAPTER 4

THE PEACE-TIME NATIONAL DIETARY

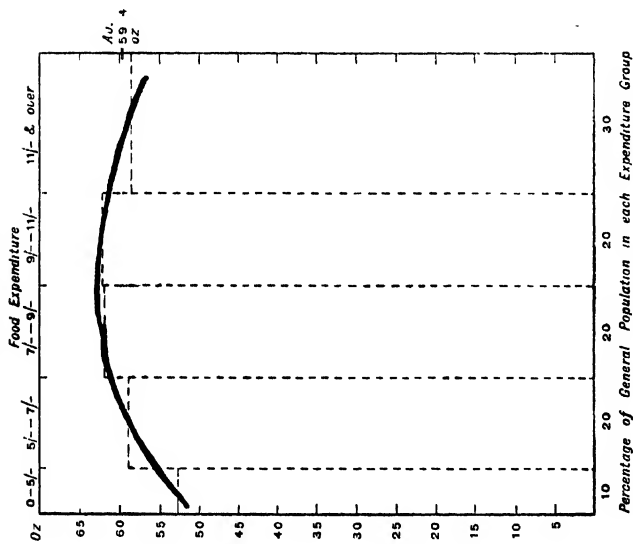
BEFORE we consider what our war-time food policy should be, it is necessary to know what the present position is. From agricultural and trade returns, we can estimate the total amounts of foodstuffs available and, from dietary surveys, we can find how the total supply is distributed among different classes.

Table 2 (p. 46) shows the total food supply for the year 1937-38. The total calorie value of the food amounts to about 51,506 thousand million. The total annual requirements of the whole population, at the highest estimate of 2,900 per head, amounts to 48,691 thousand million. The supply is thus in excess of physiological requirements. If distribution were in accordance with needs, there would be more than enough to meet the energy requirements of the whole population.

But the body needs more than energy. Although the consumption of the energy-yielding foods, for example, bread, potatoes, sugar and fats, is fairly constant among all classes except the very poor, dietary surveys show that distribution of the protective foods, milk, eggs, meat, fruit and green vegetables, is far from uniform. As income rises, the consumption of these increases. The accompanying graphs give an indication of the distribution of two energy-yielding foods and two of the more expensive protective foods. (All the graphs in these pages are based on the unpublished results of a recent survey. They refer only to consumption of food in the home.)

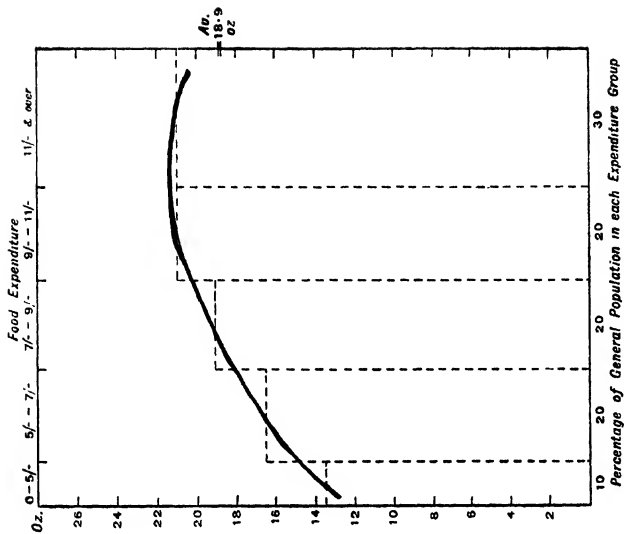
In middle-class and wealthy families, the higher consumption of protective foods is additional to the consumption of the cheaper energy-yielding foods which is more uniform

BREAD AND FLOUR (As equivalent in flour)



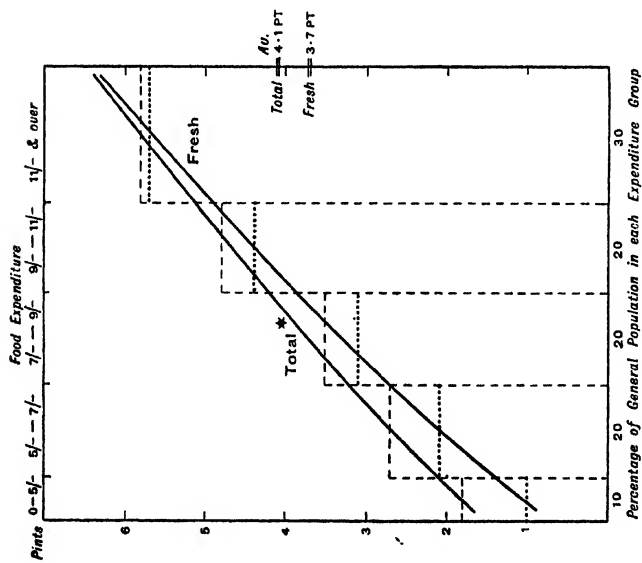
Graph 1

SUGAR



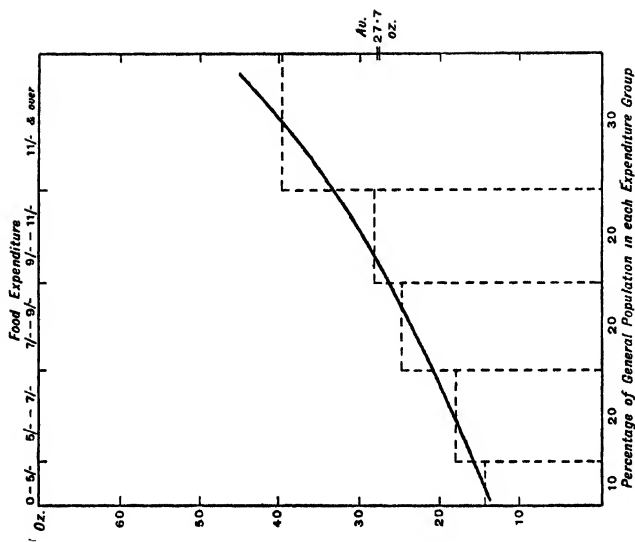
Graph 2

MILK



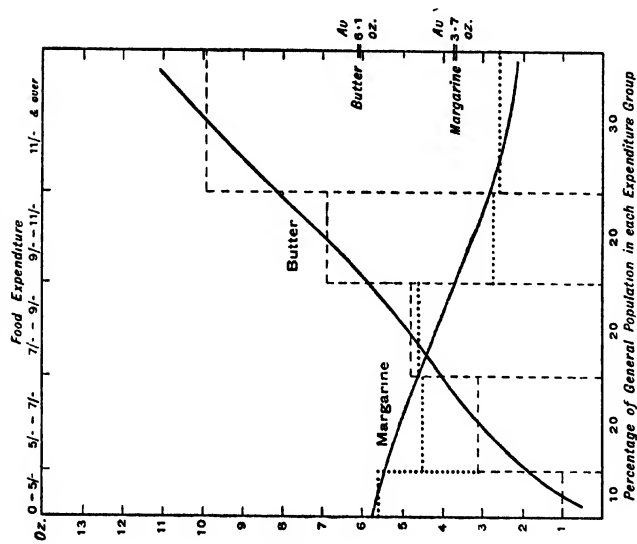
Graph 3

VEGETABLES (Excluding potatoes)



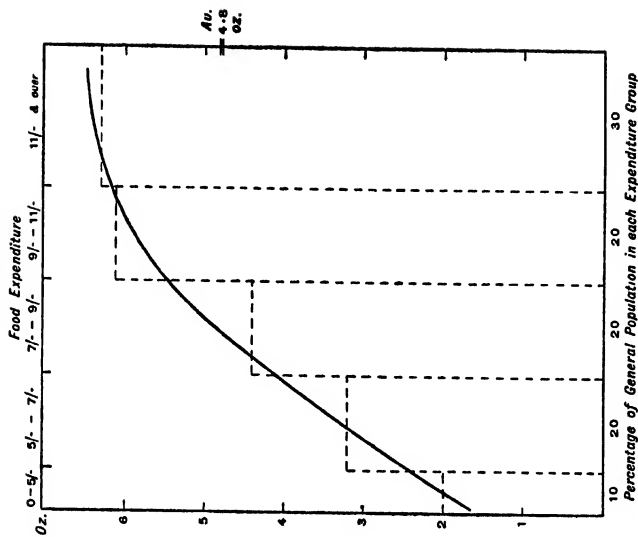
Graph 4

BUTTER AND MARGARINE ('Margarine' includes vegetable cooking fats)



Graph 5

BACON AND HAM



Graph 6

in all classes. Since these protective foods also provide energy, although in a more costly and less-concentrated form, the total amount of food consumed by well-to-do families, estimated in calories, is much higher than that consumed by poorer families. In the wealthiest third of the population, the average calorie value of the diet is 3,500, in the poorest it is 2,350 per head daily.

At first sight it would appear that either the wealthy eat too much or the poor eat too little. But the difference is not due entirely to over-eating and waste on the part of the well-to-do. There are fewer children in the higher income groups. Further the leisured classes are, on the whole, physically fit and are, therefore, inclined to take more exercise. Some of their pastimes and voluntary exercises demand more energy than ordinary work. On the other hand, the poorest group includes the permanently or intermittently unemployed. If being unemployed is accepted as meaning enforced idleness, then energy requirements are relatively low. A man merely hanging about doing nothing requires little more than 2,000 calories per day. If, however, he were to take vigorous exercise and attempt to keep fit, he would need to eat more. It is probable that if he were physically fit, he would take more exercise and eat more. With regard to the rest of the population, the large middle section who are in employment and are taking their exercise mainly as work, the amount they eat is fairly close to the amount they require.

But there is another and even more important difference between the diets of the different classes than the difference in energy value ; that is the difference in health value. The health value of the diet, its power to support vigorous growth in children, to make blood and bone, strength of sinew and nerve, depends on the amount of the protective foods eaten. These foods—milk and milk products, eggs, fruit and vegetables—are rich in vitamins and minerals

essential for health. The consumption of these varies much more between different classes than the consumption of the energy-yielding foods. The average diet of the wealthiest third of the population contains a sufficient amount of all vitamins and minerals and an excess of some of them ; the average diet of the middle third of the population contains just about sufficient of them all ; the average diet of the poorest third contains less than what we now know to be the minimum amounts required for health.

When the results of dietary surveys showed that a large proportion of the population were not receiving a diet fully adequate for health, there was a certain amount of astonishment and alarm. It is necessary, however, to keep in view that we are now dealing with a standard of diet much higher than what was thought to be necessary twenty years ago. It is only recently that we have discovered the extent to which poor physique and ill-health are due to faulty diet. Indeed, it is only within the last five or six years that standards of diet incorporating the new ideas of requirements have been drawn up. It is not surprising, therefore, that there should still be a large section of the community whose diet is not up to the new standard. The proportion of the population falling below the standard is no greater in Great Britain than it is in any of the other great nations, though it is probably greater than in some of the smaller democracies.

It will be of interest to review the change in the national dietary which has taken place in recent times. With the rise of industrialism in the nineteenth century, the diet of the working-classes deteriorated. It came to consist more and more of the cheapest form of energy suppliers. There was a great increase in the consumption of white bread and sugar, which are poor in vitamins and minerals. Malnutrition increased during the nineteenth century. At the time of the Boer War (1902) the height of recruits for the army had to be reduced to 5 ft. 0 in. It had previously

been reduced from 5 ft. 6 in. to 5 ft. 3 in. Ill-health and poor physique were so prevalent that the Government appointed an Inter-Departmental Committee to enquire into the cause. The evidence submitted to the Committee showed that they were due to inadequate and improper feeding. From that enquiry there arose school medical inspection, the feeding of school-children and other public health measures designed to improve health. The number of C₃ men found during the War of 1914-18 emphasised the need for further measures to improve the feeding of the people. Since then, the rate of increase in improvement has been greatly accelerated. There has been an extension of the provision of milk, cod liver oil and other health foods, free or at reduced prices, in schools, child welfare clinics and other health centres; and a rise in the standard of living has enabled a larger proportion of the population to purchase a diet adequate for health. Comparing the average of the years 1909-13 with 1934, the consumption of cheese, eggs, butter, vegetables and fruit increased by 43, 46, 57, 64 and 88 per cent respectively and the consumption of fat by 25 per cent.

An important feature about the improvement is that the rate of acceleration of improvement has increased. In the twenty-year period between 1914 and 1934, the improvement was greater in the second ten years than in the first and, since 1934, the rate of improvement has been still further accelerated. Milk consumption has increased by more than 15 per cent and there has been a great extension of the social and public health services designed to improve the diet of the very poor. A comparison of the results of a dietary survey in 1937-9 (not yet published) with surveys made in 1932, 1933 and 1934 shows a marked increase in the consumption of the nutrients necessary for health in families whose diets were formerly grossly deficient. The mineral most often deficient in poor diets is calcium, and the vitamin most deficient is probably

vitamin A. In the last six years the intake of calcium and vitamin A among the poorest 10 per cent of the population has increased by nearly one-third. This remarkable increase can be attributed mainly to the increased supply of milk, the richest source of calcium, and of cod liver oil, the richest source of vitamin A, in schools and at health centres.

The following table, showing the consumption per head of the main foodstuffs, gives an indication of the extent to which the diet of Great Britain has improved in the last twenty-five years. It will be seen that the biggest increases in consumption are in the protective foods. *We were a better fed nation at the beginning of this War than we were at the beginning of the last.*

TABLE 1. CHANGE IN FOOD CONSUMPTION
BETWEEN 1909-13 AND 1937-38

	1909-13	1937-38	1937-38 as percentage of 1909-13
Eggs (number)	0.28	0.64	229
Vegetables and fruit (oz.)	5.3	9.1	172
Butter (oz.)	0.7	1.1	157
Margarine and other fats (oz.)	0.5	0.7	140
Cheese (oz.)	0.3	0.4	133
Milk; total liquid milk equivalent (pint)	0.49	0.55	112
Fish (oz.)	1.8	2.0	111
Potatoes (oz.)	9.1	9.7	107
Total meat (oz.)	5.8	6.0	103
Wheat and other cereals (oz.)	10.5	9.3	89

The improvement in the national dietary is reflected in the improvement in national health. Since 1913 the grossest forms of deficiency diseases, due entirely to poor diet, have almost disappeared. Infant mortality and tuberculosis mortality rates, both governed largely though not entirely by poor diet, have been reduced more than 50 per cent and children are both healthier and taller than their parents at the same age. It is a pleasing practice of successive Ministers for Health to give statistics in the House of Commons showing the great improvement in public health and national physique. When we consider what has been done in the last thirty years, and more especially in the last five years, it gives one a feeling of pride in one's country. There are few countries in the world where social and public health services are so well developed or where there has been a more rapid improvement in health and physique. There is little wonder that we were reluctant to go to war. *Conditions were improving so rapidly that another ten or fifteen years might well have seen the end of the sordid story of poverty and malnutrition. It is, therefore, of the utmost importance that the improvement in national diet and national efficiency should be maintained, even during the War.* Victory will depend to a large extent on the courage and powers of endurance of the civilians and these depend upon health.

From this short review, we have seen that, while the greater part of the population has a diet which is fully adequate for health, there is a considerable part whose diet is below modern standards. We talk of the necessity for everyone making a sacrifice in war-time, but we cannot call upon those whose diet is already below the standard necessary for health to make any sacrifice in food. The first object of a war food policy should be to bring the diet of these up to the standard by an increased consumption of the protective foods. We shall see later that it is possible by increasing the production of the right kind of food within our own shores to produce sufficient of the

protective foods to meet the health requirements of the whole population. There has never been any difficulty in producing them. The difficulty is to get even distribution. In the next chapter, we shall consider the reasons for the maldistribution of the protective foods.

CHAPTER 5

THE REASONS FOR MALDISTRIBUTION OF FOOD

It is sometimes asserted that food habits are so rigid that it is almost impossible to get people to change their diet. Although it is true that people tend to continue to eat the kind of food to which they have been accustomed, their dietary habits do change. This is proved by the remarkable change in the national dietary of Great Britain in recent years. As a matter of fact, *food habits are determined not so much by likes and dislikes as by the kind of food available.* The Eskimo consumes relatively enormous quantities of meat because meat is plentiful and other foods are scarce. For the same reason, the Chinese coolie subsists very largely on rice. Both change their diet when a wider variety of foodstuffs comes within their reach. The change-over in the national dietary during the nineteenth century from the natural foodstuffs of the country to the tea, sugar, white bread, margarine and canned meat, which formed such a large part of the diet among the poor in the cities, did not occur because the people liked these better. These were the cheapest foods which could satisfy hunger, and they were the only ones the poor could afford. As the standard of living improved, the consumption of the more expensive foods increased. The differences in the kind of diet in different classes in civilised countries are not so much correlated with likes and dislikes as with purchasing power.

The two factors which effect a change in diet are price and propaganda. Price is the more effective among the poorer half of the population. Propaganda is more effective among the wealthier half.

The effect of price is most marked where there are two foods which are interchangeable, such as butter and

margarine. Between 1929 and 1934, the retail price of butter fell by 45 per cent. During that period, the consumption rose in the same proportion—45 per cent. The consumption of butter is so delicately adjusted to price that the wholesalers can estimate requirements from price. The accompanying graph No. 5 (p. 29) shows the consumption of butter and margarine at different family income levels. As family income falls, people change over from butter, which is expensive, to margarine which is cheap.

Even in the case of potatoes which are a relatively cheap food, consumption is affected by price. In the experiment carried out in 1935 by the Potato Marketing Board at Bishop Auckland, a poor district with a third of the workers unemployed, it was found that when potatoes were made available to the unemployed on the cash-and-carry basis at a dump at 4d. per stone instead of 7d., the retail price in the shops, the consumption of potatoes for the whole area increased by 69 per cent.

It is sometimes stated that milk consumption is so rigid that it is not affected by price. There is usually a standing order for a given amount of milk, and it takes a little time for the effect of a decrease or increase to show. But all the investigations have shown that *milk consumption does rise and fall inversely with retail price*. According to Forrester, the spring fall of 1d. a quart usually stimulates sales by anything from 5 to 20 per cent, the increase being lost when the price rises again in winter.

Milk can be taken as an illustration of the effects both of price and of propaganda. During the last few years, there has been an intensive 'drink more milk' campaign. In the last six years, milk consumption has increased by between 15 and 20 per cent. The increase, however, is confined entirely to the wealthiest 70 per cent of the population. There has been no increased home consumption of liquid milk by the poorest 30 per cent of the population. The retail price of milk is so high in relation

to purchasing power that no amount of advertising can increase consumption among the poor. On the other hand, the effect of a decrease in price combined with propaganda is seen in the School Milk Scheme. With milk available at half price, about $2\frac{1}{2}$ million children are drinking milk at school.

The combined effect of propaganda and fall in price is well seen in the case of fruit. In 1900, the price of a banana was *2d.* By 1937, it had fallen to *1d.* The consumption of bananas between these dates increased from $2\frac{1}{2}$ million to 20 million bunches. In 1920-3, the average price of grapefruit was *6d.* By 1935, it had fallen to *3d.* The annual consumption increased from 1,200 tons to 59,500 tons. The fall in price was accompanied by the 'eat more fruit' campaign.

It can be taken as a general rule for any common food-stuff that, as the price rises, consumption contracts and moves towards the wealthiest classes. As price falls, consumption expands and moves towards the poorer classes. For a large part of the population foodstuffs have in fact always been rationed by price.

Propaganda is effective among people whose expenditure on food forms a small part of their total income. The interest in nutrition is now so great that propaganda on the health value of foods is followed by increased consumption. Even the propaganda of commercial firms, which is known not always to be above suspicion, has an effect in changing food habits. The increased sales of food firms following advertising campaigns must more than cover the enormous sums of money spent. By a combination of price adjustment and propaganda, food habits could be changed fairly quickly, especially at the present time when people are prepared for change, and have indeed changed many of their other habits.

The fact that for about one third of the population the more expensive foodstuffs are already rationed by price,

creates a complication when an attempt is made to superimpose upon price rationing the different system of rationing by amount. In the War of 1914-18 rationing was not introduced until the beginning of 1918, by which time there had been such a rise in wages that the difference in the power to purchase food in different classes was largely eliminated. In the present War, however, to prevent inflation, an attempt is being made to prevent the excessive rise in wages which took place in the War of 1914-18. If this policy is successful, rationing by price will continue unless the prices of foodstuffs are adjusted to the income of the lowest paid workers.

In the next chapter we shall consider the confusion and waste which may occur when two systems of rationing operate in the same field.

CHAPTER 6

GOVERNMENT CONTROL

PRICE FIXING : RATIONING

THE Government directly or through agents has become the wholesale purchaser of food. This canalising of the wholesale trade gives the Government the control over the food position which is essential in war. It enables it to eliminate profiteering and to economise in both buying and wholesale distribution. The nationalisation of the wholesale trade in food is no doubt based on the experience of Lord Rhondda's system of food control in the War of 1914-18—a system which was most successful.

The Government, as the wholesaler, fixes the prices at which the food is sold to the retailer. This makes it easy to apply a subsidy to the essential foods. At whatever price the Government buys, it sells to the retailer at the fixed price, using the subsidy to make up the difference. The Government will sell the unsubsidised foods at a price which will cover the cost plus the expense of administration. At the beginning at least it will most probably try to adjust the price so that there will be neither profit nor loss.

This provides a flexible system which enables the Government to control consumption. So long as the consumer is assured of an ample supply of essential foods, the supply of the other foods can be regulated according to what we can afford. If we find that our foreign credits are getting too low and we must economise on imported foods, consumption can be curtailed by raising the price. In addition to curtailing consumption and saving foreign credits, this would bring in some revenue to the National

Exchequer. In the War of 1914-18 the Food Controller made a profit of £7 million. On the other hand, if the financial position is strong enough to warrant improving the national dietary, we can reduce the wholesale price of such foods as are available in sufficient quantities to meet the increased demand at the lower price. Food control must continue for a period after the War, and it affords an easy and smooth method of increasing the trade in food as the economic position improves and the supplies increase.

Unified control of food facilitates wholesale rationing. This is necessary. There must be an equitable wholesale distribution of food among retailers. Any suggestion of giving priority of supplies to the individual trader, the co-operative, the multiple shop or the small shop-keeper would be fatal to the smooth working of the system. If the control of the different foods were, as Sir William Beveridge has advocated, in the hands of people who are not connected with the trade, there is little danger of this happening.

In the case of some commodities, the Ministry of Food would need to decide what proportion should be devoted to different purposes. Thus, for example, sugar would need to be rationed to manufacturers, bakers and the grocery trade, and the Ministry would need to decide how much of the milk, if any be surplus to the liquid market, should be used for butter-making, drying, chocolate manufacturing or other purposes.

Then the wholesale supplies must be arranged so that the stores, so far as possible, are distributed in proportion to the population so that, in the event of a breakdown in transport following an air-raid or through any other cause, food would be available for separated communities. In this connexion it would be desirable to encourage retailers and even individual households to carry a surplus supply of food so that, in the event of a dislocation, there would be no temporary acute shortage of food.

While there is no doubt about the necessity for wholesale rationing and fixing wholesale prices, the case for individual rationing and fixing retail prices is not so clear. There would certainly be no need to fix the retail price of the essential foods. The retail distributive margin in these common foods is already low. If the supply is as abundant as it should be there will be no opportunity for profiteering on the part of the retailer.

It is doubtful whether it is worth while fixing the retail price of the other foods. While there may be some advantages, there are obvious disadvantages. The distribution service varies in different shops and even between different customers in the same shop. Some people demand an elaborate service while others are content with the simplest cheapest service. The butchers who deliver meat to customers who run monthly or even longer accounts must charge sufficient to cover the cost of delivery, book-keeping and lying out of his money. These are not justifiable charges in the case of the customer who buys in the shop and pays cash. If retail prices are fixed they must be fixed on information given by the retailers, and, to keep themselves right, they are likely to give figures for the more expensive service. If the retail prices are fixed according to these figures, the poor will be forced to pay for a service which they do not need and which, in fact, they will not get. Thus, for example, fruit is retailed in the 'West End' from shops with expensive retail distributive services at prices sometimes two or three times as high as in the small shops or in carts in the 'East End'. Much of it is, of course, of better quality. But price fixing involves a diminished regard for quality. If prices were fixed at the 'West End' level, the poor would be deprived of their fruit.

Retail price fixing is based on the assumption that the retailer, unless controlled, will profiteer. But he is not in the same position to profiteer as the wholesaler. There

are so many retail shops that it is difficult for them to form a ring. They are all catering for custom and competing with each other. If wide publicity be given to the wholesale prices, housewives themselves will be much more efficient than any Committee in preventing the retailer from charging too much. They will go to the shops where prices are lowest. Competition will be sufficient to prevent an excessive margin between the wholesale and the retail prices.

The Food Ministry has prepared an elaborate system of rationing, part of which has been put into operation. Without a knowledge of all the facts about the food position, it is impossible to say whether rationing of butter and bacon, the two foods so far brought within the system, is necessary. There was, however, a demand for rationing and it undoubtedly helped to prevent senseless excessive buying and hoarding.

If, however, we have an abundant supply of the essential foods so that there is no need to ration them, it is doubtful whether it is worth while rationing the others. Foodstuffs are already rigorously rationed by price. The accompanying graph No. 6 (p. 29) shows the class distribution of consumption of bacon and ham.

It is seen that about one-third of the population did not purchase the rationed amounts even in peace-time. These receive the coupons, but without the money they cannot get the butter or bacon. On the other hand, the people who have the money cannot obtain the additional butter or bacon they want without getting additional coupons. If the amount has been fixed on the assumption that everyone is to receive the same share, then there will be unsold quantities lying in the shops. The only way to get this used is for those who are too poor to purchase the amounts to trade their coupons or for the shop-keepers to sell surreptitiously additional quantities to those who can afford to purchase them. *It is impossible to have two*

systems of rationing, one by price and one by coupons, operating in the same field without confusion, waste and evasion of regulations.

The purpose of rationing is to ensure that every person will get the same amount. This will not be the case, even under the most elaborate system of rationing, unless money is rationed as well. In Germany, in the War of 1914-18 there was an extensive secret trade in food. Even during the present War, according to Press reports, a secret trade in food is going on in spite of the fact that the death penalty is being applied to those found engaged in the illicit trade. In Great Britain it would be impossible to police all farms and shops efficiently enough to prevent those with money getting more than the allowed amount of any food rationed. Having laws and regulations, which are being evaded, brings the law into disrespect and is a danger to the social structure.

Another disadvantage of rationing is that people have different physiological needs. Some people prefer a lot of meat and would do without butter to get more; others would do without meat to get plenty of butter, cheese and other foods. With a free choice, people can adjust their purchases to their needs; but with a rationing system this can only be done by exchanging coupons or food.

The bureaucratic mind naturally thinks of food control in terms of detailed regulations with forms, coupons and officials. The public, knowing some form of organisation to be desirable, may even ask for rationing, regarding it as an emergency 'nationalisation' of supplies: and this, of course, it might be. But a system of rationing by amount, with fixed prices outside the purchasing power of a large section of the people, is not in any sense nationalisation and may give the public a false sense of security. Not only so, but there is a danger that such a system may create, or help to establish, a body of official and trade interests concerned to defend and maintain control of supplies and prices when the need no longer

exists. It is important both during the War and for the time after the War, to be sure that there are no grounds for a suspicion that a food policy which serves trade interests rather than national welfare may masquerade under the appearance of 'nationalisation' of supplies.

Rationing and retail price fixing have so many disadvantages that they should be avoided if possible. It may be necessary in the meantime but if by next autumn we have an abundance of our home-produced essential foods with an ample store of those we must import, we might be able to do without the inconvenience of rationing and retail price fixing. If everyone could have enough of the basic foods for health, the other non-subsidised foods could continue to be rationed by price as they were in peace-time. People with a free choice would be able to get a diet more to their liking and make better use of the food available than would be possible under a system of rationing from Whitehall. If we could reach that stage by the autumn, then the effort being put into maintaining a rationing system could be applied to increasing home-production of food, and the money spent in maintaining an organisation for enforcing rules and regulations applied to reducing the price. The scheme of rationing should be kept in reserve so that if some unforeseen disaster should occur it could be applied. In that event, however, there should be no confusion between price regulation and coupon regulation. Rationed food should be issued either free or at a price which everybody could pay so that every person, irrespective of his wealth or poverty, would get the rationed amount.

We shall next consider our food resources and see how they could be adjusted to war-time conditions so that the food requirements could be met with the minimum of regimentation.

CHAPTER 7

OUR FOOD RESOURCES: IMPORT POLICY

It is generally reckoned that we produce at home about 40 per cent of the total food we consume. Our genuine production, however, is not much more than 30 per cent because part of our home-produced food is transformed imports. A great part of our eggs, bacon and some part of our milk and beef is produced from imported feeding-stuffs. Tables 2 and 3 show the amounts of human food and animal feeding-stuffs home-produced and imported.

TABLE 2. PRODUCTION AND IMPORTS OF
HUMAN FOOD TO THE U.K. 1937-38

	<i>Home-Produced</i>	<i>Imported</i>	<i>Total</i>
	Thou. tons	Thou. tons	Thou. tons
Wheat (as flour)	767	3,197	3,964
Sugar	469	1,618	2,087
Butter	45	472	517
Cheese	37	146	183
Eggs	409	190	599
Milk, condensed	188	103	291
Beef and mutton	918	1,007	1,925
Bacon and ham	151	325	476
Fruit and nuts	661	1,948	2,609
Milk, fresh	4,556	—	4,556
Vegetables	998*	644	(1,642)
Potatoes	4,400	145	4,545
Fish	774	186	960
Other cereals	128	237	365
Miscellaneous	437	921	1,358
Total	14,938	11,139	26,077

* Vegetables: this figure under-estimates home-production since no returns are available for many common vegetables from market gardens

TABLE 3. PRODUCTION AND IMPORTS OF ANIMAL FEEDING-STUFFS TO THE U.K.

1937-38

	<i>Home-produced</i>	<i>Imported</i>	<i>Total</i>
	Thou. tons dry matter	Thou. tons dry matter	Thou. tons dry matter
<i>Concentrates</i>			
Grain, milling offal	2,291	6,579	8,870
Oil cake	—	1,573	1,573
Miscellaneous (meat meal, molasses, etc.)	250	390	640
<i>Grass, Vetches, Lucerne, Straw and Hay</i>	23,554	29	23,583
<i>Roots and Green Vegetables</i>	3,521	—	3,521
Total	29,616	8,571	38,187

Human foods and animal feeding-stuffs together require something like 20 million tons of shipping per annum. Owing to other demands for shipping, it will be impossible to continue importing these enormous quantities in war-time. Further, the demand on our overseas credits for war material may be so great that we would need to economise our expenditure on imported food. We must, therefore, increase home-production to replace part of our imports

and no returns at all for allotment and garden produce. Dietary surveys indicate a total home consumption of about 1,850 thou. tons. Deducting imports this leaves a figure of 1,200 thou. tons (home-consumed) and, allowing for wastage in distribution and consumption outside the home, the gross home-production might be as much as 2,000 thou. tons. The estimate of the Food (Defence Plans) Department for the years 1934-36 is 1,871 thou. tons.

and we must adjust our import policy to get the maximum food value for shipping space used and money spent.

It must be remembered in planning our food supply that there will be an increase in gross requirement for food. Men of the Fighting Forces need about 4,000 calories per day, an increase of between 25 and 30 per cent over the requirements of men in peace-time occupations. Before the War has finished, we may have between three and four million men under arms. There will also be a larger number of men engaged in the heavy industries. The food requirement of every man who was formerly unemployed will be increased by 30 per cent or more. Hence, the total national energy requirement will be increased by between 5 and 10 per cent.

The extreme importance of the protective foods for both the Fighting Forces and the civilian population has already been emphasised. Because of that part of the population who did not have a balanced diet before the War, it follows that the supply of protective foods must be increased even more than that of energy-giving foods, in order to ensure a correct balance now.

It is difficult to set limits to the amount we could produce in Great Britain if all our available land were used to produce the maximum amount of food per acre.

It will be seen later that there is a loss of food energy in the conversion of plant into animal foodstuffs. The maximum amount of food energy would, of course, be obtained by devoting all the agricultural land to the production of plant food for human consumption. But this would involve both a revolution in agriculture and a serious deterioration of diet. Great increases can be obtained by making economies in animal conversion and by devoting arable land to those crops which give maximum yields per acre. This, indeed, is the policy Germany adopted some years ago. But the agricultural system can be changed only gradually. Each year's output is partly determined by what was produced in the previous year.

There is, therefore, a limit to what we can do in any one year. In the last war, a great effort was made to increase production in 1917-18. The increase, which was chiefly in wheat and potatoes, equalled only about 8 per cent of our total requirements. We could do better today if we had a policy designed for maximum food production per acre.

The agricultural policy is discussed in Chapter 8. It is sufficient for our purpose here to say that the foods which we can most easily produce in increased amounts are potatoes, vegetables and milk. Our soil and climate are well adapted for these. As will be seen from Table 2, these are the foods of which the largest proportion is home-produced.

Milk, vegetables and potatoes together contain all the nutrients needed for maintaining health. We can produce at home sufficient of these for our needs. If we decide to do this, our import policy should be designed to supply, first, the energy-yielding foods. The following table shows the estimated storage space, energy value and approximate cost per 100,000 calories of the main foods we import.

TABLE 4. ECONOMY OF SHIPPING SPACE

	<i>Approx. shipping space : cu. ft. per ton</i>	<i>Approx. energy value : Thou. Cals. per cu. ft. shipping space</i>	<i>Cost of 100,000 Cals. estimated from trade statistics</i>
Butter	55	143	27/3
Fats and tallow (in barrel)	80	118	8/4
Sugar	45	83	4/3
Cheese	60	56	39/4
Wheat (bulk)	50	56	5/5
Dried fruits	50	55	21/-
Bacon	110	39	35/9
Frozen beef	95	26	40/2
Eggs in shell	120	12	74/5

There are trade and other considerations which will affect our import policy. Thus, for example, we shall import food from eastern Europe not so much because we need it as to keep it out of the hands of the enemy. In the present discussion, however, we shall confine ourselves to national food requirements without taking into account these other considerations, important though they may be.

Of all foodstuffs, bread and fats are the most important sources of energy. These should be given priority in imports until we have a store which puts us beyond the danger of a shortage. In the War of 1914-18 a reserve of thirteen weeks' supply of wheat was aimed at but could not be secured. A reserve of twenty-six weeks' needs should be aimed at this time. *With plenty of bread and fat (butter or margarine), together with what we could produce at home, it is possible that we might be reduced to a very Spartan diet; but there would be no need for us to be forced to capitulate owing to food shortage.*

Of the other foods, sugar would commonly be regarded as the most important. It is normally the cheapest energy-yielding food. It takes up very small shipping space in proportion to its energy value and it is easy to store. But it has no special health claim to priority. Cheese and dried fruits are more expensive than sugar; but, on the other hand, they are more valuable foods for health. We could, with advantage, increase the consumption of cheese and dried fruits at the expense of sugar. A reserve store of sugar is not so important as one of wheat and fats. When it reaches a certain level, therefore, preference should be given to cheese and dried fruits.

Bacon, beef and eggs are all expensive and occupy large shipping space in proportion to their value. None of them is absolutely essential, and they should be put low on the list of priority of imports.

It is understood, of course, that we cannot have a choice

of imports simply as if we were going into a provision shop where everything was equally accessible and available. *We have to consider, in addition to food value, what is most convenient for shipping.* But, from the nutritional point of view, with the exception that wheat should be at the top of the list, and with the reservation stated above regarding sugar, the list shown in Table 4 might be taken to determine priority for imports of foods.

Confining our attention to the main objective, namely providing an adequate diet at minimum cost and with the minimum shipping space, we might summarise this brief review of our food resources as follows.

One of the most valuable resources is the four million acres we can bring into cultivation. This should be done with the utmost speed, without undue restrictions on the grounds of cost. All the money spent would be retained within the country. Our additional production should consist of those foods which we are best adapted to produce, give the biggest yield per acre and supply the constituents needed for health so that we could give priority of shipping to the concentrated energy-yielding foods, which are cheap, easily shipped and easily stored. On these grounds, our increased production would consist largely of potatoes, vegetables and milk.

In our imports, other things being equal, preference should be given to wheat, fats, especially butter, sugar and/or cheese and dried fruits in the order named. These, together with what we produce at home, would be of most value in bringing the national diet up to requirements. Bacon, beef and eggs occupy a large shipping space, are not essential and, unless there are special reasons, should not be imported in any quantity until our requirements for the former foods are met.

It will be seen below (p. 55) that it takes 5-20 tons of feeding-stuffs to make one ton of human food. It is obviously uneconomical of shipping to import feeding-

stuffs for farm animals. Our agricultural system during the War will need to change to a considerable extent in the direction of reducing the conversion of imported plant food. Our animal products should be limited to what we can produce from grass and home-grown crops with any imports that may be surplus to our needs for direct consumption.

In view of the necessity for conserving our foreign credits, we should, so far as possible, import from our own Dominions and Colonies. We should reach an understanding with the Dominions as to what foods we wish to import so that they could adjust their production accordingly. The most important would probably be wheat, dairy products and dried fruits. If this is agreed, it should be possible to estimate how much of these we should require and to decide, in consultation with the Dominions and Colonies, what proportion could most conveniently be supplied by each.

CHAPTER 8

OUR FOOD RESOURCES : POLICY FOR AGRICULTURE

WE have embarked upon a policy of increased production. But, so far, the policy has not been very clearly defined. The farmer is being urged to produce more, but he does not yet know what additional foods he should produce or, what concerns him more, what prices he will get for them.

So far, the emphasis has been on ploughing up old grassland. We are attempting to bring in an additional two million acres this year. The total amount of additional land to be ploughed up can be allocated roughly to counties in proportion to the amount of land in cultivation in peacetime and in the counties the allocation can be sub-divided for individual farms. But indiscriminate ploughing up according to a given ratio either for districts or farms will not make the best use of the land. *There are some farms where 50 per cent of the grass could, with profit, be ploughed up and other farms where it would be a mistake to plough up any.* It all depends upon the quality of the grass and what is being produced on the farm.

We are already short of feeding-stuffs, and the shortage will continue. Grass is by far the most important feeding-stuff we have. By turning the summer excess flush into silage, it can be used in winter. In a test running on the Duthie Experimental Farm at the present time, it is shown that a cow can give up to 5 gallons of milk per day on nothing but grass silage. An acre of good pasture will give 5-6 tons of grass silage, if it be made from grass in the early stages of growth. This is equivalent in feeding value to a ton of oats which is about the average yield

of an acre. In addition to the silage, the pasture gives a good deal of grazing in the autumn and a little in the early spring when it is most valuable. Much of the grassland ploughed up will be put into oats which will be used for stock feeding and some of it may actually provide less food than if it had been left in grass. Agricultural committees and farmers should give heed to the warning given in the House of Commons by Mr. Colville, the Secretary of State for Scotland, that "it would be unwise to encourage the breaking up of the younger pastures which are still in good form and condition and fully capable of producing succulent and nutritious grass".

With additional land under cultivation, we shall grow more. But there has been no very clear lead given as to what additional crops we should grow. That should be decided in accordance with the yield per acre and our requirements for different foods. Grain does not give the largest yield of food per acre. Some of the vegetables which can be used either for human food or feeding animals, such as carrots, turnips and kale, give a higher yield than grain; kale, sugar beet and potatoes give twice as much. *The potato is probably the best first crop for ploughed up old pasture.* In the War of 1914-18, while there were some failures of grain crops out of old pastures, the average potato crop was 7.1 tons compared with an average of 6.2 for the whole of England and Wales in the preceding ten years.

For a number of years we have been subsidising the production of wheat and sugar beet. Even with a guaranteed price which was double the world price, the home wheat production increased between 1931 and 1937 by an amount less than 10 per cent of our total consumption. At the present time, owing to the high price for home-produced wheat since the subsidy was introduced, most of the land on which wheat can profitably be grown is already being used for this crop. We cannot grow anything like sufficient for our needs in any event. We must continue to

import it. Fortunately, it is economical in shipping space and it can be stored for a year or more. Canada has an abundance of wheat, and if we cannot import wheat from Canada we can import nothing. Sugar beet is a more valuable crop in war than wheat. Including the beet pulp and the beet tops, which are valuable feeding-stuffs, it yields twice as much food per acre.

It would be uneconomical to make a sudden drastic change in our agricultural system of cropping. It would be foolish to attempt to reduce the output of any food-stuff which we were producing in peace-time. We have four million acres available for increased production, and we must plan to increase the crops we need most. After full consideration, it is probable that the order of priority for the increased production would be potatoes, vegetables, fodder crops to replace imported feeding-stuffs, sugar beet, and grain (wheat, oats or barley).

The production of animal substances depends upon our import policy. Feeding-stuffs for animals are uneconomical to import because it takes five or more units of feeding-stuffs to produce one unit of human food. We must, therefore, economise in the use of imported feeding-stuffs and also in the use of home-grown feeding-stuffs like oats which might be used for human consumption. Animals vary in their efficiency in transforming feeding-stuffs. It is impossible to give exact figures for each animal as the efficiency depends on the rate of production. The higher the yield or the faster the rate of growth, the more efficient the animal is. The following table indicates the approximate relative efficiency. The numbers are the number of lb. of feeding-stuffs required to produce 1 lb. of human food, both reckoned as dry matter.

Milk cow	.	.	5
Pig	.	.	8
Hen	.	.	15
Beef cattle	.	.	20

The cow is obviously the most efficient animal and, as milk is of much greater importance than any of the other animal products, we should concentrate first on milk production. It is difficult to assess the relative values of the pig and the hen. The former is the more economical transformer. But, on the other hand, eggs are of greater health value than bacon and bacon is more easily imported than eggs.

It is obviously uneconomical to use imported feeding-stuffs for beef production. It has been argued that we must use imported 'concentrates' (grains, meals, etc.) to fatten cattle in winter for the purpose of making straw into farm-yard manure. But, in a time of scarcity, we cannot use concentrates to make dung. Straw can be tramped for dung by store cattle carried through the winter on home-grown fodder crops with a minimum of concentrates. The resulting dung might not be quite so rich in nitrogen, phosphorus and lime but the difference can be made up at less cost by artificial fertilisers than from the feeding-stuffs used to fatten cattle. As a matter of fact, most of our beef and mutton is produced off grass and fodder crops and even though very little imported feeding-stuffs were used, the reduction in output would not be so great as seriously to affect the supply. The main difference would be that more cattle would be fattened off the grass and a higher proportion of our beef would be produced in the summer and autumn.

The sheep makes a rather better use of feeding-stuffs than the bullock and, in large areas of rough grazings which are suitable only for sheep, concentrates are used mainly for early spring lamb production. Early lamb is a luxury we can do without in war. We can reduce the feeding of concentrates to a minimum and allow lambs to be fattened off the grass. The only difference would be that lambs, which were formerly killed in spring, would not be ready until summer or autumn. We should thus

get as much mutton with a reduced consumption of concentrates.

The above considerations suggest that our animal husbandry policy should be to maintain or increase production of milk, using, so far as possible, grass, grass silage, hay and fodder crops; to reduce bacon and eggs to the level that can be maintained with the home-produced or imported concentrates which are surplus to the requirements for human food; and to reduce to a minimum the use of concentrates for beef and mutton.

Having decided what additional crops we wish and what animal products it would be most advantageous to produce with the feeding-stuffs which will be available, we must consider what method should be applied to ensure that they will be produced. *It is of little use for a committee to tell the farmer what he should produce. If he cannot see a profit, the committee cannot compel him to produce. If he sees a profit, he would produce in any case.* Every farmer plans his output according to the profit which he thinks he will get from the different crops. He thinks of the probable prices of the different things he can produce and considers these in relation to the capacity of his farm, including his system of rotation. He then decides what combination of crops will yield him the biggest total profit. Unless we were prepared to Sovietise the industry, output will continue to be regulated by price even in war-time. The only way to get the increased amounts of food we need is to offer guaranteed prices which will induce the farmer to produce them. If we wish a big output of one commodity, say, potatoes, we must offer a bigger price. The bigger the price offered, the more potatoes will be produced. If we require a smaller amount of some other commodity, we must offer a lower price. With a smaller price, a smaller amount will be produced. We can get our different foodstuffs in the proportions we want

them if we adjust the prices offered for each in the right proportion to the others.

The use of concentrated feeding-stuffs can be regulated in the same way. Thus, if it is considered desirable that these should not be used for beef production, the price offered for fat cattle should be so low in proportion to the price of concentrates that it is not profitable to use them for beef production. It is possible to get the available concentrates used for any class of animal by regulating the prices of the products of the different animals. The price of the product determines the use of the raw material.

There may be some difficulty in the first year in fixing prices in a proper ratio to each other to call forth the different foodstuffs in the proportions wanted. We have, however, a great deal of information which would enable us to make a fairly accurate estimate even for the first year. With each successive year, estimates would become more accurate. However inaccurate the estimates were, they would give some regulation of production which would be better than merely calling for increased production of food without supplying an effective stimulus to get the desired response.

The price offered should be a minimum price for the period of the War and at least three years after it. If rents, wages, manures and the other main items in the cost of production were kept constant, there would be no need to alter that price and it would help to prevent the 'vicious spiral' which everyone dreads if these could be kept as near present prices as possible. It would be understood, however, that in the event of any substantial rise in costs taking place, the minimum price would be raised accordingly so that the farmer would always be assured of a price which would cover the cost of production.

The farmer must also have a guaranteed market. There is no difficulty about this. The Government is already

the wholesale purchaser of many foods, and there is little doubt that by the end of this War, as in the last, it will be in complete control of the purchases and wholesale trade in food. The food difficulty in the War of 1914-18 would never have occurred had Lord Rhondda's scheme for canalising wholesale purchases under Government control been brought into operation in 1914. There should be no delay in the present War in getting the whole organisation complete.

If the additional output be well planned we need not worry too much about a possible post-War glut. The additional milk and vegetables will be needed after the War to keep the national dietary up to the standard for health. A higher consumption of potatoes should also continue. We might have a glut of potatoes when the War finishes, but they could be used for cattle feeding. A post-War glut of potatoes would be a small War insurance against a possible food shortage.

The method of fixing prices which has been applied so far is not likely to give us the best results. Since the War began, prices have been allowed to jump about. Thus the price of oats, which, in Scotland, was below 20s. per quarter at the beginning of the War, went up to 50s., and it is now fixed at 39s., which is nearly double the pre-War price, and is far above the cost of production. On the other hand, the price of potatoes is about the same as what it was last year. If the two prices remain at their present levels we shall have a tremendous increase in oats next year. Some of the land that might have gone into potatoes will go into oats, and it is doubtful whether we shall get the potatoes we need.

With an uncertain shifting policy, we shall not get as much from our land as we might, and what we do get will cost the country more than it need do. We should have a vigorous bold policy with guaranteed prices and markets for two or three years ahead and with the prices

adjusted to call forth what we need. The policy can be so clear and simple that both the public and the farmer would understand what we were trying to do. If the prices are right the farmer will get down to his job with a feeling of certainty and the nation will get the food.

CHAPTER 9

THE BASIS OF A WAR-TIME DIETARY

WE have seen (Chapter 4) that the average dietary of about one third of the population is above the standard required for health, the diet of about one third nearly right and the diet of the remaining third below the standard. In the third of the population whose diet is not up to the standard, some might improve it by a more judicious expenditure of family income. There are many families, however, where the income is so low in proportion to the price of 'protective' foods that they are unable to buy sufficient. This has been proved by many investigations, such as those of Seeböhm Rowntree, the late Dr. McGonigle and the one recorded in *Food, Health and Income*.¹ The existence of this poverty and its effect on health has been recognised and we have extended our public health and social services to provide at least a small amount of some of the protective foods to those who need them most.

This part of the population, who, through poverty, are unable to buy sufficient of the right kind of food, is the weakest part of the food front. This is the part of the population on which we must concentrate in planning a war-time dietary. If the poorest are well fed, we need have no anxiety about the well-to-do. The numbers of poor will increase during the War. The price of the protective foods has risen; the income of the small *rentier* and small business class is shrinking, and, owing to the dislocation of trade and industry, while many people will be better off, some of the black-coated workers have lost

¹ *Food, Health and Income*: Report on a survey of Adequacy of Diet in Relation to Income. By Sir John Orr. Second Edition. (London: Macmillan and Co., Ltd. 2s. 6d. net.)

their jobs. Many families will be caught between the scissors of falling income and rising food prices.

The more powerful Trade Unions will be able to obtain increases in wages. Many of the unemployed will find work. But the only way to prevent the vicious spiral of rising prices and rising wages, which will, sooner or later, bring distress to millions of people, is to fix the prices of the absolute essentials of life within the purchasing power of the poorest and maintain them at that level no matter how the value of money may fluctuate.

The three chief essentials are housing, food, and fuel. Rents have not altered and can be controlled as in the War in 1914-18. If household fuel and a few of the essential foods were fixed as suggested, we could carry through the War with the assurance that no person was suffering to an extent which would affect his health or efficiency.

This method would be much more efficient and cost the nation less in the long run than the otherwise inevitable vicious circle with inflation and a greatly increased expenditure on old-age pensions, out-door relief and other social and public health services.

The Government has wisely decided to subsidise food. It has already announced that £50 million a year will be devoted to that purpose. In peace-time we spend more than £1,000 million on food. In the War of 1914-18, the price of the controlled or subsidised foods rose by 133 per cent and of the uncontrolled foods by 284 per cent. At the rate at which we are spending money, the rise in price is likely to be even more rapid in this War. It is obvious that we cannot afford to subsidise all foods. We must select those which are most essential. And as the only reason for a subsidy is to prevent prices rising beyond the purchasing power of the poor, it should be arranged so far as possible in such a way that the main benefit will go to the poor.

Bread is probably the most essential food. Consumption is roughly the same in all classes. It should come first on the list of foods to be subsidised. During the War of 1914-18, we spent £162 million subsidising bread.

It is doubtful whether it is worth while subsidising bacon. It has no special value for health and cannot be considered an essential food. Consumption among the poorest is less than 2 oz per head per week compared with 6 oz or more among the well-to-do. If it were subsidised, well-to-do families would receive three times as much benefit from the subsidy as poor families.

Milk is the most important of the protective foods and on the list of foods to be subsidised should be placed second only to bread. Even in peace-time, milk should be subsidised for health reasons. But it is unnecessary to subsidise all milk. The well-to-do can afford to pay the economic price. Consumption among the wealthiest 70 per cent is, on an average, about $\frac{2}{3}$ pint per head per day. Most families would continue to consume that amount even though the price were increased. Consumption among the poor, however, is strictly limited by price. Including what is supplied at half price in schools and free at health centres, it is only about $\frac{1}{4}$ pint per head per day. The principle of subsidising milk is already established. But at present the subsidy is unnecessarily applied to all milk so that only a small part of the benefit goes to the poor. All the money available for this purpose should be applied to reducing the price to the poor to enable them to bring consumption up to what it is among the well-to-do. The poor are more in need of milk than the well-to-do, because their diet otherwise is more deficient in the protein, vitamins and minerals which milk supplies.

It is not sufficient merely to allocate an arbitrary sum to subsidise food and apply it in a general way to keep prices from rising. To get the greatest benefit from the subsidy on food, we must use the limited amount of money

available according to a carefully thought-out plan. To save the National Exchequer the number of foods subsidised should be the smallest compatible with national health.

To save our foreign credits, preference should be given in selecting the list to those produced at home. To make the subsidy effective, it should be sufficient to bring the essential foods within the purchasing power of the poorest.

It would require a good deal of consideration to decide which foods should be regarded as essential. It would be even more difficult to fix the price at which they must be sold to have it adjusted to purchasing power. But we have the facts on which decisions could be made. Thus, for example, the Nutrition Committee of the Medical Research Council has all the available information on food requirements and on the relative values of different foods for meeting these requirements, and the Government Advisory Committee on Nutrition has, in the last two or three years, acquired a good deal of information on family incomes and on the proportion of the incomes available for food.

In making up the list of foods to be subsidised to provide a diet good enough for health at the lowest cost to the nation, consideration should be given first to the protective foods which are the most expensive. There is already sufficient milk being produced in the country to bring consumption among the whole population up to nearly $\frac{3}{4}$ pint per head per day. We could increase the production of vegetables to bring consumption up to 6 oz per head per day, the present level among the well-to-do. Bringing the consumption of milk and vegetables of the whole population up to these levels would in itself prevent any gross malnutrition from deficiency of vitamins or minerals. This would cost the nation comparatively little because we already have the milk in the national larder and we can ourselves produce at home all the additional vegetables we need. To make up the total amount of food

required, we should turn first to potatoes and oatmeal because we can produce an abundance of these at home and they are both of greater value for health than imported energy-yielding foods, such as wheat and sugar.

We consume, on an average, about 9 oz. of potatoes per head per day, consumption varying in different families from almost none to more than 23 oz. In some other countries, the consumption of potatoes is much higher. In Belgium, the average is 19 oz. per head per day; in Germany, the average is 16 oz. and in some States it rises so high as 26 oz. The potato, especially if cooked and eaten with the minimum of waste, is of such high health value that it might almost be classed among the protective foods. It is the main source of vitamin C among the poor. Increased consumption of home-grown potatoes would, therefore, help to compensate for decreased consumption of imported fresh fruit. *All authorities on nutrition recommend increased consumption of potatoes.* Even apart from the necessity for replacing imported foods by those we can produce at home, it is desirable that consumption should be increased. During the period of the War we should try to get consumption increased by somewhere between 50 and 100 per cent.

Of the total oatmeal produced in Great Britain in peacetime, only a small percentage is used as human food. The average consumption is less than $\frac{1}{2}$ oz. per head per day. Many families, however, consume much larger amounts. In one Scottish village, where a dietary survey was made in 1938, the average consumption of working-class families was about 5 oz. per head per day. In that village, milk consumption was high because milk was obtained as a perquisite, that is, as part of the wage. Oatmeal is largely used for porridge which goes with milk. One of the reasons for the decrease in consumption of oatmeal in recent years has been the high price of milk. If $\frac{3}{4}$ pint of whole milk, per head per day, plus whatever

supplies of separated milk were available, could be obtained by poor families, the consumption of oatmeal would increase.

Oatmeal is rich in vitamin B₁. Potatoes are rich in vitamin C and both are richer in certain other nutrients than bread. Diets containing, on an average, about $\frac{2}{3}$ pint of milk (the present level of consumption among the better-off two-thirds of the population), 6 oz. of vegetables, say, 2 oz. of oatmeal and 16 oz. of potatoes would be nearly, if not quite, up to the standard needed for health. It would be a better diet than the poorest third of the population have at the present time. These foods can all be produced at home in amounts ample to meet the needs of everybody. All the money spent in subsidising them would be kept within the country. The more of these we produce and consume, the less demand there will be for foreign credits to purchase food and for shipping space to import it.

But we cannot produce sufficient to supply all energy needs. The two most important energy-yielding foods are wheat and fats. The next important, in the present circumstances, is probably sugar. Wheat in sufficient amounts to meet our needs will receive priority in shipping. There are, it is understood, already large stores of oils and fats in the country. Sugar, though not essential for health, is one of the cheapest sources of energy. It will continue to be imported; but, provided there is sufficient of other foods, no harm would follow a reduction in imports.

These are the cheapest energy-yielding foods we can purchase and they occupy the smallest shipping space in proportion to their food value.

With these seven foodstuffs alone, it is possible to make up a good diet, one much better for health than many families have in peace-time. Appendix 1 gives details of a hypothetical diet consisting only of these foods and comparable in energy value with the habitual diet of the

poorest 10 per cent of the population. With the exception of sugar, the amount of each is more than the present average consumption but in every case is considerably less than the amount consumed by many families.

The accompanying table compares the composition of this hypothetical diet with that of the present average diet of the poorest ten per cent in the country.

	<i>Calories</i>	<i>Protein</i>	<i>Carbo-hydrates</i>		<i>Fat</i>
		gm.	gm.		gm.
Hypothetical diet	2,100	50	350		48
Average composition of pre-War diet of poorest ten per cent	2,000	56	286		64
	<i>Calcium</i>	<i>Iron</i>	<i>Vitamins</i>		
			<i>A</i>	<i>B</i>	<i>C</i>
	gm.	mgm.	International Units		
Hypothetical diet	0.66	13	3,500	650	1,700
Average composition of pre-War diet of poorest ten per cent	0.48	10	2,000	310	680

It is not suggested that any family should live only on these foods or that the hypothetical diet should be taken as an example of a diet which would suit everyone or even anyone. It is given merely to illustrate the fact that a diet with sufficient of all the vitamins and minerals and nearly sufficient protein and fat to meet the needs of the whole population could be provided from these cheap basic foods. If we were willing to adjust our dietary habits more to home-produced foods and set ourselves to produce these in abundance, it would be possible, theoretically at least, to reduce imports to nothing but the energy-yielding foods, wheat, sugar and fats. A sufficient amount of these to meet total calorie requirements could be imported with about a third of the tonnage used for importing foods and feeding-stuffs for animals in peace-time.

But even though the shipping position became so serious that we could import nothing but wheat and fats, it would never be necessary to live on such a Spartan diet. Without importing any feeding-stuffs,¹ we could still produce at home, in addition to milk, potatoes and vegetables, the three most important home-produced foods in war-time, nearly as much beef and mutton as in pre-War days, at least some eggs and bacon, fish in addition to the herring which we no longer export, legumes, barley, fruit and small amounts of other foods. These would be sufficient to give variety to the diet.

It is extremely unlikely, however long the War may last or however the fortunes of war may go, that we would be forced to cut down our imports of food to wheat, fats and sugar. It is as certain as anything can be in war that, in addition to what we produce at home, there will always be available imported supplies of other foods. There will be a regular supply from our own Dominions and the Argentine and most probably an irregular supply from eastern Europe consisting of foods purchased not so much because we need them as to keep them out of the hands of the enemy.

We have probably devoted too much space to showing how independent we can become of imported foods provided we increase home-production of the right kind of food. The calculations we have made, however, show that, provided we have the right food policy, there is no need to worry about possible starvation on account of interference with shipping. By next autumn we could be independent of shipping except for wheat, fats and sugar. As a nation we would need to consume more milk, potatoes, vegetables and oatmeal for the production

¹ A certain amount of imported feeding-stuffs will probably be available throughout the war. Oil seeds are imported for the manufacture of soap, lubricants and margarine. The need for these will not decrease. The residues are made into cake. The oil-seed-industry in Great Britain came into existence during the War of 1914-18.

of which Great Britain is specially suited. But the health of the country would be improved by the increased consumption of these which, with profit, could be continued after the war.

We would also need to consume more of the cheap and easily imported bread and fats to replace some of the other foods more difficult to import. But with plenty of these four home-produced foods, replacing meat as one of the foods difficult to import by bread and fat would not seriously affect national health though it would involve a change in dietary habits which we could tolerate until the end of the War. It would help us to tolerate the diet if we remembered that even on such a diet we would be better fed than many families had been in peace-time.

There is thus no need for the public to worry about the food position so far as supplies are concerned. The difficulty in war is the same as it was in peace-time, not one of supply but one of more equal distribution of the food which is available. That is a domestic problem which we were dealing with in pre-War days. War conditions involving Government wholesale purchase of food and subsidies to adjust prices to purchasing power can greatly facilitate the solution of the problem of distribution which we shall discuss in the next chapter.

CHAPTER 10

THE BASIS OF A WAR-TIME DIETARY

(continued)

HAVING decided on the list of foods to be regarded as essential and, therefore, to be subsidised, we must concentrate on increasing the supply of these until there is such an abundance that there is enough for everybody without any need for rationing. Of our imports, we should give priority to wheat and fats and then to sugar until our stores are sufficient to put us beyond the danger of any shortage. In war we can suffer a shortage of some foods with impunity, but a shortage of either bread or fat would be serious. In the last War we attempted to build up a store of thirteen weeks' supply of wheat. We were able to touch that level only once and the reserve was usually much less than that. The danger of a shortage of wheat caused a good deal of worry. It is probable that the Food Defence Committee in the months before the present War, when freights were low and the price of wheat was so low that it was the cheapest concentrate to use for feeding animals, built up a large reserve. Shipping space should be devoted to wheat until we have at least a six months' reserve. We should have an even bigger reserve of fats.

We must also make sure that our agricultural policy will call forth the additional home-grown essential foods we need. This is discussed in Chapter 8. Our policy should be adjusted to that end immediately so that we may have them this autumn. If arrangements are not made for growing the essential foods before the crops are in this spring, we may be short of them until the autumn of 1941.

Having made provision for the supply of the essential foods to be subsidised we must next consider how a sufficient amount can be made available to everyone with the smallest subsidy.

The two most expensive foods are milk and vegetables. The high retail price of these is due largely to the heavy cost of distribution. People whose means are limited—and these are the people we wish to get advantage of the subsidy—could assist by doing with the less expensive form of distribution. This can be done with milk by making it available on the cash-and-carry basis for those willing to take the trouble to collect it from the shop.

We have at present various schemes for supplying milk free or at reduced prices and, before the War, plans were being made for an extension of these schemes to children of pre-school age and adolescents and there is little doubt that during the War something will be done to increase consumption among the poor. It is probable that a scheme will be worked out by an Inter-Departmental Committee. There is a danger that a scheme worked out by officials in Whitehall may be too complicated, involving restrictions of the amounts allowed to be purchased at the cheap prices, possibly a means test to limit the number of families allowed to take advantage of the cheap milk, and certainly an extensive organisation to see that the regulations and prices are adhered to.

It is impossible to adjust physiological needs to official regulations. Many a child, on account of previous illness or other cause, needs more milk than another child of the same age and the need for milk by some old people and invalids, outside the age limits, might be as great as that of children. Further, no means test would be equitable. There is no fixed level of income above which no families need cheap milk and below which all families need cheap milk. A family with an income of £3 per week, owing to sickness, to financial assistance given to some poorer friend or

relation or some other cause, which an official could not, according to the regulations, take into account, might be in greater need of cheap milk than another family of the same number with £2 19s. per week.

The easiest and cheapest way to increase milk consumption is to let the people get at the surplus milk without any restrictions or officials. Just before the War, surplus milk was being sold for manufacturing purposes at from 5d. to 10d. per gallon. Let this milk be made available to any person who is willing to take the trouble to collect it from shops on the 'cash-plus-bottle-and-carry' system at 1s. per gallon, the same price at which $\frac{1}{2}$ pint per day is made available to school-children. In districts where there are not sufficient dairies to serve the community, grocers, greengrocers or any kind of shop could be chosen to serve as depots. The Milk Marketing Board, which controls the milk industry, could arrange to deliver the full bottles at these shops and, at the same time, take away the returned empty bottles together with any unsold milk. It would cost very little to push a full bottle of milk across the counter in exchange for an empty bottle and the money. There would be no wastage and no broken bottles to pay for so the cost to the shop-keeper would be negligible. The sale of the milk would help to bring other custom. There are many shops which would be willing to undertake this additional trade for a very low margin.

Some of the arguments against making milk available on the cash-and-carry basis are: (1) people would not take the trouble to collect the milk at shops; (2) the milk sold on the cash-and-carry basis would reduce the amount sold on the door-to-door delivery and would diminish distributors' profits; and (3) people might buy milk on the cash-and-carry basis who are able to afford to have the milk delivered.

The first argument is scarcely worth considering. We cannot push milk down people's throats if they do not

want it and, in war-time, the tax-payer cannot afford to pay for delivering milk to people who are so lazy that they won't collect it for themselves. If we have a national scheme which makes milk available in sufficient amounts, within the purchasing power of everybody, then the Government has no further responsibility. If some people do not take advantage of the cheap milk, then they have no one to blame but themselves. As a matter of fact, all the evidence we have on milk consumption in relation to price suggests that consumption would increase if the price were lowered.

The interference with the distributors' business would probably be much less than is anticipated by the distributors. The poorest 30 per cent of the population, who are likely to take advantage of the cheap milk, at present purchase only about 14 per cent of the total liquid milk sold. It is unlikely that any considerable proportion of well-to-do families, who at present purchase the great bulk of the milk, would consider it worth while collecting the milk for the sake of the saving in cost of delivery. Some people, who are at present getting milk delivered, might collect the milk, but they themselves are in a better position than an official applying a means test to judge whether they can afford the service of delivery.

The other expensive food is vegetables. They are cheap on the farm, but expensive in the towns. The high retail price is due to the heavy cost of transport and the big wastage. The best way to reduce cost of distribution and wastage is to have vegetables, so far as possible, produced in the locality where they are consumed. It is estimated that there are $3\frac{1}{2}$ million gardens in the country and about 900,000 allotments. The Government scheme anticipates an additional 500,000 allotments which would bring gardens plus allotments up to 4,900,000. It is estimated that there are about 10 million households in the country. If nearly half were producing vegetables up to the full capacity of

their allotments and gardens, a considerable part of the population would be producer consumers with no cost of distribution and the minimum of waste.

The campaign for growing vegetables in allotments and gardens should be intensified. We should try to have as near as possible every family in the country growing something. Even families in cities, who have no gardens, could grow vegetables, such as lettuce or parsley, in window boxes or pots. It should be impressed upon the people that it is the duty of every family to try to become self-supporting in food to some extent, however small. The psychological effect of having as many families as possible growing something would be of great value. The people would realise the importance of the food supply in war-time and, in growing vegetables, would feel they were doing something to help their country and help themselves.

But even though the allotment scheme were pushed to the fullest possible extent, we should still need to increase vegetable production on the farms to produce sufficient to bring consumption up to 6 oz. per head per day—the level among the well-to-do. But with so many people growing vegetables themselves, there will be a slump in the price and the Government would need to offer a guaranteed market with a guaranteed price to induce farmers to grow sufficient. The guarantee should cover vegetables suitable for canning or drying and the price offered for these should be high enough to call forth sufficient to keep the canning factories and drying plants running to full capacity during the summer and autumn building up a store of preserved vegetables for winter use. The sugar beet factories, which do not begin working until late autumn, might be used for drying what was beyond the capacity of the canning factories to handle.

With so many families wholly or partly self-supporting in vegetables, the problem of distribution would be lessened.

It would still exist, however, in large cities. Several schemes have been considered in the past few years for the better distribution of vegetables. These should be taken out of the pigeon holes and reconsidered in the light of war conditions. It might be possible to decrease the distance and the cost between the farm and the consumer by establishing local wholesale markets or even by arranging for a larger proportion of the vegetables to go direct from the grower to the retailer. Growers might be assisted to organise distribution by establishing street markets or getting into closer touch with the retail shops. The whole problem of vegetable distribution is difficult, but it is not insoluble. It may never be possible to make it perfect but there is no reason why it should not be greatly improved to reduce cost and wastage and bridge a good part of the gulf between what the producer gets and what the consumer pays.

The distribution of the other foods raises no problem. The margin between the wholesale and retail price of sugar, bread, fats and oatmeal is already low and there is no need for any adjustment of the normal trade channels. The same is true, though not to the same extent, of potatoes. It should be possible to make economies in their distribution.

We have seen that from these seven foods it is at least theoretically possible to meet all the nutritional needs of the body. But the average nutritional needs are not the sole consideration. We must take into account special physiological needs of individuals and also, though not to the same extent, dietary habits and likes and dislikes. Thus, some people like meat, and, if they get plenty, would do with less other protein-rich foods such as fish and cheese. Vegetarians use no meat but want more cheese, fruit and other foods. One or more of the beverages, tea, cocoa and coffee, are universally used.

As we have seen, even though we give priority to maintaining the supplies of whatever we decide to be the abso-

lutely essential foods, there would always be a varying supply of all other foods in common use. To enable everyone to get a share of these so that they could, within limits, adjust their diets to their likes and dislikes, it is necessary to fix the price of the subsidised basic foods at a level which would enable sufficient of them to be purchased from part of the money available for food, leaving the other part for the purchase of non-subsidised foods. The bigger the subsidy, the cheaper the basic foods can be made and, consequently, the larger the amount left for the other foods.

In deciding what size subsidy we can afford, we must keep in view the fact that, as expenditure on the War increases, the cost of food will rise and, consequently, the size of the subsidy and the burden on the Exchequer will increase. No doubt there are other urgent national needs for the successful prosecution of the War ; but it is doubtful whether any need is more urgent than the maintenance of the people in health and physical fitness.

On the other hand, if we have a food system which ensures that no person need suffer from hunger or malnutrition, there will not be the same need for public health measures or charitable organisations supplying food free or at reduced cost to necessitous families. These have done a great amount of good, but they are costly and inefficient makeshifts.

Working-class families spend nearly half of their total income on food. Therefore adjusting the price to purchasing power now and pegging it at that level no matter how the value of money changes will be the most effective method of preventing the vicious spiral which, if allowed to go unchecked, will end in inflation and national bankruptcy.

With the method proposed, the diet of the poorest families in the country would be better than what it was in peace-time. But equality of sacrifice involves grading up as well as grading down. This suggested grading up

to a new rock-bottom level, below which no family will fall and at which every family will be able to have sufficient food to maintain it in health, will strengthen the home front during the War and help our social system to stand the shocks and strains in the inevitable post-war dislocation. Now that the State has taken over our national food supplies, the refusal to subsidise sufficiently to maintain the whole nation in health and, at the same time, put a bottom into poverty would show lack of political foresight. Democracy is on trial against the new totalitarian system of government. There must now be very few politicians who do not regret that in our food measures of the past ten years we did not place first and foremost the objective of ensuring a diet good enough for health for every member of the community.

For the purpose of our discussion we might assume that it would be found, after consideration of all the facts, that it was equitable that a sufficient amount of the basic subsidised foods should be made available for two thirds of the money available for food in the poorest families, leaving one-third for non-subsidised foods. Thus, if it were found that 4s. 6d. per head per week represents the money available for food in the poorest families, prices would be adjusted roughly so that $\frac{2}{3}$ pint of milk, 6 oz. of vegetables and sufficient bread, fats (margarine and/or butter), potatoes and oatmeal for their daily needs would be available for 3s. per head per week, leaving 1s. 6d. for the purchase of meat, fish, dairy products, tea, cocoa or coffee and other foods which would not be subsidised and, consequently, would reach their economic price level according to supply and demand.

On a rough reckoning based on local (Aberdeen) prices at this date, January 1940, we estimate that the subsidy needed would be about £100 millions per annum. The bases for the calculation are given in Appendix 2.

Under this system every family would be able to bear

its share of the War burden. As the price of the unsubsidised foods rises less can be purchased with the 1s. 6d., part of which might need to be devoted to buying more of the subsidised foods to supply sufficient energy for those engaged in heavy work. On the other hand, if the food position improves, as it will do if we increase our agriculture to the extent we should and our imports increase as they will do, if not during the War at least after the War, the price of the other foods will decrease and the 1s. 6d. will purchase more. Every family would thus share in the good or ill fortune of the country.

Objections to this policy may be raised on the grounds that poor people do not like the basic foods and would not purchase them even though they were made cheaper. The main difference between the hypothetical diet and the present kind of diet in use among the poor is the increased consumption of milk, vegetables and potatoes. There is no reason for believing that the poor would not consume as much milk and vegetables as the well-to-do if the price were within their reach and we have evidence that they would consume more potatoes. In the Bishop Auckland experiment, when the price of potatoes was reduced by 43 per cent on the cash-and-carry basis, consumption increased by 69 per cent.

It is true, however, that the poor have not been accustomed to drinking as much milk or eating as much vegetables as the well-to-do and propaganda would be needed on the health value of milk, vegetables and potatoes and on how to cook them in such a way that their full nutritive value would be maintained. If a sufficient amount were within the reach of the poor, propaganda would be worth while but, unless they are within the reach of the poor, it is of doubtful value. We have several times been asked to write a short simple statement on the kind of meals poor people should have to maintain them in health. But we have always reluctantly refused because we have found

it impossible to suggest meals which they could purchase. The Government Advisory Committee on Nutrition recommends that every child should have a minimum of $1\frac{1}{2}$ pints of milk per day. This costs more than 3s. a week. If the amount available for keeping a child is 3s. it is impossible to outline a diet for it on such a basis. If any person doubts this let him look at the kind of diet Seeböhm Rowntree worked out. It had no liquid milk and no butter and, in spite of that, was still, according to his estimate, beyond the purchasing power of many families. Propaganda is of value only if people can follow the advice given. In the years just preceding the outbreak of the present War we had a tremendous propaganda for increased milk consumption. Consumption increased by between 15 and 29 per cent but the increase was limited to the 70 per cent wealthiest who could afford to purchase more. Apart from what was given free or at reduced prices, there was no increased consumption among the poorest thirty per cent of the population.

If the basic foods were made available at a price within the purchasing power of everybody then it would be possible to recommend diets making the best use of the basic foods and spending the remaining 1s. 6d. per head to the best advantage on other foods. The cost of the diets recommended would be the most effective part of the propaganda.

CHAPTER 11

CO-ORDINATION OF EFFORT

It is obvious that the problem of securing adequate supplies of food in War-time requires the closest co-operation between those responsible for health, agriculture, trade, shipping and finance. In peace-time these were all dealt with by different government departments. There was no single department responsible for food as a whole.

The lack of central responsibility increased the difficulty of evolving plans for food supplies in War. It was considered necessary to set up a new Food (Defence Plans) Department which was the nucleus of the present Ministry of Food. Instead of attempting a complete systematic co-ordination of all government activities concerning food it confined its activities largely to improvising systems for the control of each of the important foods and turned naturally to the traders concerned for advice and assistance.

This has given the impression, rightly or wrongly, that the food trades are exercising too much influence in deciding the food policy. In a letter to *The Times*, Sir William Beveridge writes that in the present War controls of commodities of all kinds are being exercised largely by persons engaged in the trades controlled. He then goes on to say that Lord Rhondda's success as food controller in the War of 1914-18 depended on the fact that he was, as he himself openly and emphatically declared, "on the side of the consumer as against the trader". It is unfortunate that even in time of war there should be such a strong conflict of interest between the consumer and the trader, that the food controller finds it necessary to declare which side he is on.

The co-operation of the trader is necessary. The large business concerns which control the trade in the main foodstuffs have the expert knowledge needed to make unified buying and unified wholesale distribution a success. One might predict that the expert knowledge and the organisations which the big business concerns have put at the disposal of the Ministry of Food have already saved the exchequer millions of pounds in the purchase of food.

But the trader, essential though he is to the necessary canalisation of food purchases and wholesale distribution, can advise and assist only on trade questions. There remain the important questions of health and agriculture. The lack of co-ordination between the Ministries of Food, Agriculture and Health is causing a certain amount of disquiet. Meetings and conferences of all the Ministers concerned with food is not sufficient to deal with the situation because they have heavy duties of which food represents only a small part.

The Ministries of Health and Agriculture have each their expert advisory bodies to whom they refer their special problems. But there is no central body dealing with all the different aspects of the new food problem which the war has created.

The difficulty of obtaining unity of purpose and unity of effort might be got over to some extent by the formation of a small Food Council of men with a knowledge of food supplies and food requirements. Such a Council, free from administrative and executive duties, could canalise all information and make recommendations based on a study of all the facts and a consideration of all the interests. It could anticipate difficulties and have possible solutions prepared in advance. It could take a long view so that whatever is done for War ends may fit into post-War needs. Such a Council could be of great assistance to the Minister of Food and other ministers concerned, who are themselves already overworked with the day-to-day

administration of the departments and other Cabinet and political duties.

The establishment of such a body would also help to dissipate any suspicion that the large trading concerns have an undue influence in deciding questions affecting the food position.

CONCLUSIONS

WE have examined the food position on the assumption that the object of the war policy is to provide the whole population with a diet adequate for health. It is to be regretted that we did not have such a policy in pre-War days when food was actually or potentially so abundant that measures were taken to restrict the national supply. As we have seen, even though there has been a remarkable improvement in the national dietary of recent years, consumption of the relatively expensive protective foods among about a third of the population is still not up to the standard for health.

For national health reasons we need more protective foods and to provide for increased consumption due to the War, the total national food supply must be increased 5-10 per cent. We have to meet these increased demands with less shipping and less foreign credits than in peace time. Home production must therefore be increased to the utmost. Exhortations, schedules, committees and orders about methods of marketing and about maximum and minimum prices which change from time to time, and even formal, but indefinite, guarantees to give the industry a fair deal, are not sufficient to create that feeling of confidence necessary to ensure production of the additional foods we need.

The most important of the measures affecting distribution are the canalisation of wholesale purchases and the recently announced provision of £50 million to help to prevent a further rise in prices.

The other schemes for detailed control of distribution with rationing and price fixing are of doubtful value for

improving the diet of the poorest part of the population. Unless they are administered with the greatest care they may actually do harm. Thus, some commodities have a wide range of price. Pooling and price fixing will tend to raise the price of the cheapest qualities which are those the poor use. Then again, the poor get a less expensive distributive service than the well-to-do. Prices cannot be fixed on lower than the average, and are more likely to be fixed on the higher costs of distribution, and therefore the price will be unnecessarily increased to the poor.

Price fixing may also create difficulties to the merchant and retailer. Costs which are equitable in large cities may be quite inequitable in say the Orkney and Shetland Islands. If prices are fixed to suit a merchant in the city, they may be so low that merchants in sparsely populated districts may be unable to carry on their business on the margin allowed. On the other hand, if they are fixed to cover the more costly distribution, the merchants in the densely populated areas will have an excessive margin.

The handling, checking and the counting for schedules, forms and millions of coupons, requires thousands of officials and clerks and causes a great deal of additional work and inconvenience to merchants and shopkeepers. The cost and trouble may be justified under present conditions. It is, however, worth while making an attempt to have the food position so strong that detailed bureaucratic control would be unnecessary.

We have suggested that the Government should concentrate first on providing ample supplies of a few essential foods which, taken together, can provide everything the body needs for health, and adjust the wholesale price to the purchasing power of the poorest. If this were done there would be no need to worry about retail distribution. The channels of distribution for the flow of food have worked themselves out under natural conditions and become adjusted to supplying the needs of consumers.

The flow is determined by the pressure of the total supply and the resistance offered by price. If the amounts in the country are sufficient and the wholesale price low enough, the normal trade channels of distribution will be more effective and better understood by merchants, retailers and consumers than an artificial system hurriedly improvised by officials or committees who cannot have a full knowledge of the highly complicated business of food distribution.

The foods we have named as essential and the figures given of prices and purchasing power are to be taken merely as illustrations. The list would need to be compiled after taking into consideration health requirements, possibilities of home production, shipping space, foreign credits and other factors. It is almost certain that with the supplies we could have by the autumn, it would be possible to include more foods than we have named. Every additional food placed on the list of those brought within the purchasing power of the poor raises the standard of living and increases the real wealth of the nation, which consists more in the health, physique and contentment of the people than in money.

The policy we have suggested can be put into effect by controlling only the wholesale trade which is the bottle neck of the national food supply. If wholesale supplies and prices are right, distribution can be left to itself with the minimum of interference. We have been accustomed to a good deal of liberty in Great Britain and it is desirable to preserve it even in war. We must reduce to a minimum bureaucratic control which destroys initiative, enterprise and voluntary co-operation and service which are the very essence of democracy.

The policy would also carry us through the post-War reconstruction period which is likely to be difficult and prolonged. It is foolish to imagine that we need only temporary food measures, and that after the War we shall come back to 1938 conditions. The War is the convulsive

end of an epoch. When it finishes 1938 may seem as far away as 1038. No one can foresee the future, but we hope when the fighting finishes we will start to build a new world with a better social and economic system than the past one, which is ending in the present War. It will be a long and arduous struggle. All the nations engaged in war will be poor. There may be grave food shortage in parts of Europe. Our difficulties will be greatly lessened if we have a long-range food policy which will ensure that during the War and the post-War period, however poor the nation or part of the nation may be, every family will be assured of sufficient food to maintain them in health.

HYPOTHETICAL DIET BASED ON A POLICY OF HOME PRODUCTION OF PROTECTIVE FOODS AND PRIORITY IN IMPORTS FOR WHEAT, FATS AND SUGAR

	QUANTITIES PER HEAD PER DAY							
<i>Home Produced</i>
Milk .	. .	o·6 pt.						
Vegetables .	.	6·0 oz.						
Potatoes .	.	14 to 18·0 oz. ¹						
Oatmeal .	.	2·0 oz.						
		<i>Cals.</i>	<i>Prot.</i>	<i>CHO</i>	<i>Fat</i>	<i>Ca</i>	<i>P</i>	<i>Vitamins (I.U.)</i>
		gm.	gm.	gm.	gm.	gm.	mgm.	A B ₁ C
Nutrients		800	27	130	17	·56	·81	2,890 479 1,713
<i>Imported</i>								
Bread .	.	11·8 oz.						
Fats .	.	1·2½ oz.						
Sugar .	.	2·2½ oz.						
		<i>Cals.</i>	<i>Prot.</i>	<i>CHO</i>	<i>Fat</i>	<i>Ca</i>	<i>P</i>	<i>Vitamins (I.U.)</i>
		gm.	gm.	gm.	gm.	gm.	mgm.	A B ₁ C
Nutrients		1,301	23	223	31	·11	·74	615 167 —
Total Nutrients		2,101	50	353	48	·67	1·55	3,505 646 1,713

¹ According to method of preparation.

APPENDIX 2

ESTIMATE OF SUBSIDY NEEDED TO ADJUST
COST OF HYPOTHETICAL DIET TO
PURCHASING POWER (January, 1940)

		<i>Cost in pence/wk.</i>
		<i>Jan. 1940</i>
Milk	4.2 pt. at 3 <i>d.</i> (Aberdeen)	12.6
Vegetables	42 oz.	3.9
Potatoes	126 oz. at 1 <i>s.</i> 2 <i>d.</i> stone	7.9
Oatmeal	14 oz. at 4 <i>s.</i> stone	3.0
Bread	82.6 oz. at 2 <i>d.</i> lb.	10.3
Fats	8.75 oz. at 6 <i>d.</i> lb.	3.3
Sugar	15.75 oz. at 5 <i>s.</i> 3 <i>d.</i> stone	4.4
		<hr/>
Basic price suggested for this group		45.4
		<hr/>
		9.4
		<hr/>

Therefore the subsidy would be approx 9.4*d.* per head of population per week or £95 million per annum.

The rough estimate is made on the gross cost of the seven basic foods and takes no account of how the subsidy would be applied in practice or of money already being spent subsidising production in agriculture.

Since this was written the Government has announced its intention to subsidise consumption to the extent of £50 million per annum. It is not clear what part of this sum has already been applied in respect of the prices given above. The £100 million would be additional to whatever has been so applied.

